Austria ... Sch. 18	Indonesia ... Rp 2700	Portugal ... Esc 80
Bahrain ... Din 0.650	Italy ... L 1300	S. Arabia ... Rls 6.00
Belgium ... BFr 38	Japan ... Y650	Singapore ... S$ 4.10
Canada ... C$2.00	Jordan ... Fils 500	Spain ... Pta 110
Cyprus ... C£0.50	Kuwait ... Fils 500	Sri Lanka ... Rup 30
Denmark ... Dkr 7.25	Lebanon ... £L 0.00	Sweden ... Skr 6.50
Egypt ... E£1.00	Luxembourg ... LFr 38	Switzerland ... SFr 2.20
Finland ... Fmk 6.00	Malaysia ... Rm 4.75	Taiwan ... NT $85
France ... FFr 6.00	Mexico ... Pes 300	Tunisia ... Din 0.600
Germany ... DM 2.20	Morocco ... Dh 6.00	Turkey ... L 210
Greece ... Dr 70	Netherlands ... Fl 2.50	U.A.E. ... Dh 6.50
Hong Kong ... HK$ 12	Norway ... Nkr 6.00	U.S.A. ... $1.50
India ... Rup 15	Philippines ... Pes 20	

FINANCIAL TIMES

EUROPE'S BUSINESS NEWSPAPER

No. 29,634 Tuesday May 28 1985 D 8523 B

Malaysia steers clear of becoming the next Mexico, Page 10

Bangladesh cyclone toll likely to soar

More than 3,000 people are known to have died and a further 15,000 people are missing following the cyclone and tidal waves that hit the south eastern coast of Bangladesh on Saturday. The death toll is likely to soar as the floods recede. Eyewitnesses report seeing hundreds of bodies floating in the water.

President Hossain Mohammed Ershad declared a day of national mourning today and cancelled a planned visit to China to supervise relief operations. Over 250,000 people have been made homeless and emergency camps have been set up to receive them. The three armed services have been put on war footing, with helicopters dropping drinking water and other supplies and naval and other vessels searching for survivors.

Hundreds of people are reported to be adrift on rafts and rooftops in the shark-infested waters off the coast. President Ershad described the cyclone, accompanied by 10-20 foot tidal waves, as the worst disaster to hit the country. On one island, Uriarchar, only about 500 of the estimated 5,000 to 10,000 inhabitants are known to have survived.

World news

Gulf War air raids intensify

Iran and Iraq mounted air raids against each other's cities after the weekend assassination attempt on the Kuwaiti head of state dashed peace hopes.

Sheikh Jaber al Ahmed al Sabah narrowly escaped the attack by a suicide car bomber. The Islamic Jihad movement claimed responsibility for the operation. Page 18

Gulf peace pledge

Soviet Foreign Minister Andrei Gromyko told visiting Arab foreign ministers Moscow wanted a rapid peaceful settlement to the Iran-Iraq war. He also attacked U.S. interference in the area.

Craxi to Moscow

Soviet leader Mikhail Gorbachev is expected to tell Italian Prime Minister Bettino Craxi of his concern over lack of progress at the Geneva arms talks and his strong opposition to Washington's Strategic Defence Initiative when the two meet in Moscow today. Page 18

EEC benefit

Spain's planned entry into the European Community next year would benefit Latin America and North African countries, former French Foreign Minister Claude Cheysson said.

Peace talks

UN peace envoy Diego Cordovez held talks with Pakistani officials, including Prime Minister Mohammad Khan Junejo, in a bid to launch a new round of peace talks between Afghanistan and Pakistan.

Pope plot plea

Defence lawyers entered pleas of diplomatic immunity for three Bulgarians charged together with five Turks with plotting to assassinate Pope John Paul in 1981 when the trial opened in Rome.

HK transfer pact

Britain and China exchanged documents ratifying their agreement under which Hong Kong will be returned to Chinese rule in 12 years. Page 18

Kenyan MP killed

Kenyan MP Horace Owiti was murdered in the western town of Siaya, the second killing of an MP this year.

Children killed

Eight people, four of them children, died when a three-storey building collapsed on the northern outskirts of Naples.

Search for bodies

Frogmen were trying to reach the sunken hulls of two oil tankers in San Roque, Spain, in a search for bodies after an explosion killed at least 33 people. Page 2

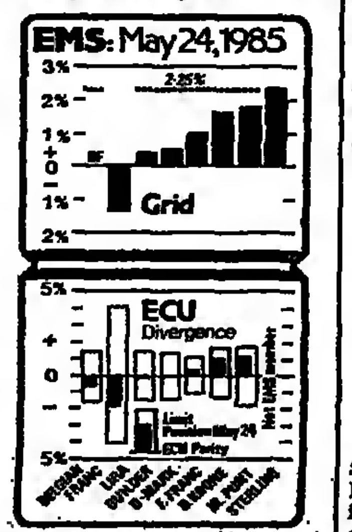
Israeli talks

Egyptian Oil Minister Abdul Hadi Kandeel, the first Egyptian minister to visit Israel in three years, said in Tel Aviv his talks with Israeli leaders would help improve relations between the two countries.

Business summary

Tokyo shares rally

TOKYO share prices rallied, led by shipbuilding and steel groups. The Nikkei-Dow average added 48.97 to 12,643.73 – the first rise in three sessions – with rises holdings a clear advantage over declines. Page 25, Leading Prices, Page 28



EUROPEAN Monetary System: currencies traded quietly last week with financial centres winding down ahead of the long holiday weekend. The Belgian franc remained comfortably within its divergence limit and showed continued confidence despite a recent reduction in interest rates

The chart shows the two constraints on European Monetary System exchange rates. The upper grid, based on the weakest currency in the system, defines the cross rates from which no currency (except the lira) may move more than 2¼ per cent. The lower chart gives each currency's divergence from its "central rate" against the European Currency Unit (ECU), itself a basket of European currencies.

TENTATIVE settlement of one-week-old pilots' strike at United Airlines collapsed, leaving the two sides apparently further entrenched in their bitter dispute over a two-tier wage scale. Page 3

BRAZIL and the International Monetary Fund opened talks on a new austerity programme in which the two most likely obstacles to agreement are inflation and monetary expansion targets. Page 2

PHILIPPINES expects to draw the first tranche from the $925bn (£734bn) of new money agreed with creditor banks last week in early July, Premier Cesar Virata said. Page 2

STEEL output in the U.S. has fallen by 12.5 per cent in the first four months of this year, offsetting healthy increases in Europe and Japan, according to the International Iron and Steel Institute. Page 4

SOVIET leader Mikhail Gorbachev said in a keynote speech outlining his economic programme that national income would have to grow by 4 per cent a year compared with 3 per cent recently if living standards were to rise. Page 2

DEBENHAMS, British stores group fighting a £492m ($624m) takeover bid from Burton and Habitat Mothercare, is working on plans for a £600m management buyout defence which includes selling some of the group's prime assets. Page 9

Production difficulties in London resulted in the loss of many copies of the Financial Times on Saturday. We apologise to readers, advertisers and distributors.

Shia forces press battle to seize all Palestinian camps

BY TONY WALKER AND NORA BOUSTANY IN BEIRUT

AMAL, the Shia militia, continued its bloody campaign for total control of the Palestinian refugee camps in Beirut's southern outskirts and the elimination of armed opposition in them as the conflict entered its eighth day and casualties mounted.

Intensive consultations in Damascus between various Lebanese factions and Palestinian groups owing allegiance to Syria has still not broken the deadlock. The authorities put the number of dead at anything from 250 to 400, with more than one thousand wounded. Until independent observers are allowed into the camps, however, there is no way of establishing a credible figure.

The Red Cross was yesterday again denied access to the camps. As many as 25,000 refugees have fled the Sabra, Chatila and Bourj Barajneh camps since the fighting began late on May 19.

They allege cold-blooded killings of Palestinian men and boys in the besieged camps. Eye-witnesses report seeing patients being dragged out of Palestinian-run hospitals and shot. Hundreds of Palestinian males from inside and outside the camps are said by their families to be missing.

While denying the allegations, Amal seems determined to clear the camps of Palestinian fighters. Initially the assault received the green light from Syria which wants to remove all Palestinian fighters loyal to Mr Yassir Arafat, chairman of the mainstream Palestine Liberation Organisation, from Lebanon. But the conflict has now gone beyond the control of Damascus.

Syria is now calling for a total ceasefire, withdrawal of Amal militamen from the camps and their control by Lebanese paramilitary police. It also wants the "neutral" Druze Progressive Socialist Party, an ally of Amal in controlling West Beirut but one which has desisted from the "war of the camps," should collect arms from the guerrillas defending the camps.

The Palestinians rejected previous Syrian-backed plans for handing their weapons to the mainly Shia Lebanese Sixth Brigade which has been assisting Amal in the fighting.

There has been no indication whether this compromise plan is acceptable to all parties.

Amal, flushed with its success in precipitating Israeli withdrawal from south Lebanon (scheduled for completion in the next week or so) seems to want all the credit for ridding West Beirut and south Lebanon, where Shia predominate, of Palestinian guerrillas and even refugees.

Amal has asserted uncompromisingly that it will never allow a resumption of guerrilla activity against Israel which led to punitive retaliation against villages inhabited by members of the sect and the harsh Israeli occupation.

Lebanese President Amin Gemayel, unable to even assert authority over his Maronite Christian community in its heartland, and the powerless "Government of National Unity" are helpless onlookers.

Mr Rashid Karami, Lebanon's Prime Minister, deplored the violence. "We have all become helpless in the face of the atrocities and injustices that are being committed as a result of the hated fighting," Mr Karami said.

Mr Arafat, arriving in Tunis for a meeting yesterday of Palestinian leaders said: "The Arab terrorists are continuing the work of Sharon" – a reference to Israel's former de-

Continued on Page 18

Refugees seek shelter; PoW swop backed, Page 3

Goldsmith agrees truce with Crown Zellerbach

BY TERRY DODSWORTH AND WILLIAM HALL IN NEW YORK

SIR James Goldsmith, the Anglo-French financier, has called a truce in his five-month battle for control of Crown Zellerbach, and has agreed to co-operate in the company's planned reorganisation.

A joint statement issued by Sir James and the 115-year-old West Coast forest products group at the weekend said that they would "work together to maximise shareholders values through restructuring Crown," and that Sir James would be elected to the company's board today.

The deal appears to reflect a compromise in which Sir James will have a direct say in the company's restructuring plans in return for agreeing to limited restrictions on adding to his 25 per cent stake.

Sir James has been pursuing Crown Zellerbach since late last year, and finally made an offer at $42.50 a share last month. In a bid to fight off Sir James, the company sought a friendly suitor, Mead Corporation, but a proposed $50 a share deal fell through at the last moment.

In a final effort to fight off Sir James, Crown announced a restructuring of its business, splitting the company into three parts, two of which will be distributed to shareholders. Sir James then dropped his $1.2bn bid, but has continued to wage a proxy battle for boardroom control against the company.

There has been unusual interest in the battle for control of Crown because it has been the first case in which a corporate raider has challenged a company using a new variety of so-called "poison pills." This defence mechanism was designed to make it prohibitively expensive to make an unwelcome takeover approach, by giving shareholders special rights which are activated in the event of a takeover.

However, Sir James has pressed ahead and triggered the defensive device, taking him into what one merchant banker described as "unknown territory."

Sir James's camp was claiming yesterday that he had won more from this deal than had previously been offered. In earlier discussions, Crown Zellerbach had offered him two seats on the board as long as he accepted a three-year standstill agreement under which he would acquire no more than 19.25 per cent of the company.

Under the new agreement, Sir James' advisers believe that Crown Zellerbach is more willing to consider his proposals for restructuring the company.

At the same time, the restrictions on Sir James buying more shares are not particularly onerous. He cannot acquire any additional shares without giving 10 day's notice, or without waiting 48 hours after the filing of a formal statement on Crown's restructuring.

It is far from clear, however, what impact Sir James can have on Crown Zellerbach's restructuring plans given that he will be a lone voice on a board which up until now has been hostile to his views. Moreover, so far there has been no indication whether the proposed reorganisation will be to his liking.

Because he has activated the poison pill, it is virtually impossible now for a "white knight" such as Mead to come to Crown Zellerbach's rescue. This means that Sir James will have to work with the company over a lengthy period in order to reap the sort of returns he expects on his investment.

Crown Zellerbach's shares closed $¼ down at $40¾ on Friday, which is about $3 less than when Sir James made his bid in early April.

Hong Kong handover ratified

BY DAVID DODWELL IN MACAO

BRITAIN AND China yesterday ratified their agreement on the handover of Hong Kong in 1997, paving the way for a trouble-free visit to Britain by the Chinese Premier Zhao Ziyang, who arrives later this week.

At the same time, in neighbouring Macao, President Ramalho Eanes of Portugal accepted the premature resignation of the governor of the Portuguese enclave, clearing the air in advance of negotiations on China's resumption of administrative power in that territory.

President Eanes issued a blunt warning to local political groups with whom the governor, Rear Admiral Almeida e Costa, has been feuding since he arrived in 1981, demanding unity within the community during the negotiation period.

China and Britain have also announced their three-man teams to sit on the Land Commission, one of the two main bodies set up in Hong Kong under the Sino-British agreement, just a week after a similar announcement on the Joint Liaison Group (JLG), to deal with problems arising out of Hong Kong's transition to Chinese sovereignty.

The British team on the Land Commission is made up of Mr John Chan, an important Hong Kong Chinese member of the British team that negotiated the agreement in Peking, Mr John Todd, Hong Kong's Director of Lands, and Registrar General Mr Noel Gleeson. While these names have been known informally for some weeks, formal publication has been delayed because of Peking's difficulties in finalising its team.

It is understood there are few Chinese officials with sufficient understanding of Hong Kong's complex lands policy. On the Chinese side will be Mr Yanheng, a deputy department head in the Hong Kong and Macao office that answers to the State Council, Mr Lee Wai-Ting, who heads the New China News Agency's (NCNA) research department in Hong Kong, and Mr Chung Shui-Ming, a researcher in the NCNA's economics department.

The issue of people's property rights after 1997 was one of the most sensitive throughout two years of negotiation over Hong Kong's future. Under the agreement, no more than 50 hectares of land can be auctioned in any one year, with net revenues being shared equally by the present Hong Kong government, and the Chinese government acting on behalf of the post-1997 administration.

Government earnings from land auctions had become significant in the early 1980s, but became less critical after the collapse of the property market in 1982. The territory's normal annual programme of auctions has been suspended until September so the Land Commission can settle the ground rules for future auctions.

President Eanes made his announcement on the future of Macao

Continued on Page 18

Lear Fan will not repay UK for failed jet scheme

By John Hunt in London and Our Belfast Correspondent

LEAR FAN, the U.S. aircraft maker which ceased trading last week, said yesterday it would not repay any of the £57m ($72m) in public funds that the British Government put into the turbo-prop venture in Northern Ireland.

The statement from the company's headquarters in Reno, Nevada, will increase the anger of British MPs at the collapse with the loss of 2,800 potential jobs.

Lear Fan's decision to pull out of the manufacture of its advanced carbon fibre aircraft followed repeated technical problems and its failure to win an airworthiness certificate in the U.S.

It comes as a major embarrassment to the Thatcher Government after the 1982 collapse of the De Lorean sports car project in Northern Ireland, which resulted in the loss of £80m of public money.

There is certain to be angry reaction when a statement is made in the House of Commons next week.

The attitude of the company is likely to lead to a clash with the British Government. Dr Rhodes Boyson, the Northern Ireland Industry Minister, said his first priority will be to recoup as much of the public stake as possible.

The all-party Commons Public Accounts Committee will also be investigating the affair. Mr Robert Sheldon, the Labour MP who is chairman of the Committee, said last night that it will be very concerned to see that public funds are rescued.

He is to ask Mr Louis Calvert, the Northern Ireland Comptroller and Auditor General, to report on the collapse. The committee will then use this as a basis for its own investigation.

The statement from Lear Fan confirmed that its board of directors passed a resolution last Thursday to cease trading.

It added: "The British Government and private investors twice entered into funding agreements for the research of the Lear Fan aircraft.

"Both her Majesty's Government and the private investors have, in good faith, completed their obligations under both funding arrangements."

The Select Committee investigation will want to know whether the Government-appointed directors fulfilled their role of monitoring the

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FOUNDER MAY QUIT TOP POST

Sinclair seeks up to £15m in new cash

BY JASON CRISP IN LONDON

SINCLAIR RESEARCH, the troubled British home computer group, is trying to raise £10m to £15m ($12m to $19m) for a financial reconstruction. The main hope is to persuade an industrial company to take a substantial minority stake.

Sir Clive Sinclair, founder and major shareholder, is expected to resign as chief executive and concentrate on the technical side of the business. The reconstruction may also mean Sir Clive will lose overall control of the company. He currently owns 85 per cent.

The search for new finance follows a cash-flow crisis which has been temporarily resolved by an extension of credit by its two major suppliers – Thorn EMI and Timex – and an increase in borrowing facilities by its bankers, Barclays and Citicorp.

An attempt to raise £50m for an ambitious project to make an advanced type of microchip revealed in March has been postponed at least to the end of the year.

The favoured solution to the company's immediate problems would involve an investment by a potential industrial partner with which Sinclair could have technical and comercial links. Sinclair Research and its financial advisers, N M Rothschild, are also expected to consider the various sources of venture capital.

It is unlikely existing institutional shareholders which paid £13.6m for 10 per cent of the company more than two years ago would be willing to refinance the company through a conventional rights issue.

Earlier this year Britain's other leading home computer group, Acorn, was rescued by Olivetti, the Italian office products group, which bought a 49 per cent stake for £10.4m. When Acorn was floated on London's unlisted securities market 18 months previously it had a market capitalisation of £135m. The Olivetti deal also involved agreements on marketing and technology.

Sinclair Research approached Thorn EMI as a possible investor but has not received a reply. Given Thorn EMI's own problems and the dim view the London market took of its purchase of Inmos, the microchip company, it would appear an unlikely investor in Sinclair.

Sinclair Research has already started trying to recruit a new chief executive to replace Sir Clive.

While Sir Clive is still hailed as Britain's leading high-technology entrepreneur, his reputation was tarnished by launch of the C5 electric tricycle which has had a poor reception. Although the C5 was funded privately by Sir Clive and has no direct connections with Sinclair Research, London analysts cite it as a sign of poor commercial judgement.

Sinclair Research's problems stem from the collapse of the inexpensive end of the home computer business last year, after three glorious years in which the only problem was churning out enough products to meet ever-growing demand.

The usual problem of a shortage of stocks before Christmas was reversed last year and ever since the retailers have been particularly cautious about re-ordering. Sir Clive told a shareholders meeting in March that the company had made a pre-tax profit of £7.9m on sales of £89.5m in the last nine months of 1984.

The bad news was that the profit for the full year would be significantly less as sales in January and February had virtually dried up. In each of the previous two years, Sinclair Research made a pre-tax profit of £14m.

Stocks at the year-end were worth £34m, after some write-downs. This was alarmingly high because it came at the end of the peak pre-Christmas selling period which can account for half the year's total sales. Even though orders have been cut dramatically, stocks still stand at about £30m, partly reflecting the receipt of goods which were already in the pipeline.

Sinclair Research's greatest immediate hope comes from the pocket black-and-white television, which was formally launched in September 1983 nearly two years later than first promised.

The TV was dogged by production problems which are now thought to be over. Sir Clive says Timex is making 10,000 TVs a month and this will be increased to 40,000 by the end of the year.

Continued on Page 18

Texas Instruments president and chief executive, Mr Fred Bucy, has taken early retirement in a surprise move which is seen widely as a forced departure after a series of heavy setbacks for the Dallas-based electronics group. He will be replaced by Mr Jerry Junkins, at present executive vice president of Data Systems, one of TI's consistently successful divisions. Page 18

CONTENTS

Pope's would-be killer claims to be Jesus Christ

BY JAMES BUXTON IN ROME AND LESLIE COLITT IN BERLIN

THE LONG-AWAITED trial of five Turks and three Bulgarians accused of conspiring to murder Pope John Paul II, which started in Rome yesterday was enlivened by a dramatic intervention by Mehmet Ali Agca, the *Pope's Turkish* would-be assassin.

To the consternation of the prosecution lawyers and the barely concealed delight of defending counsel, Ali Agca suddenly shouted out from the barred cage in which he was held: "I am Jesus Christ. It's true." Then putting out his arms he said: "I announce the end of the world. Everyone will be destroyed."

The outburst, which was swiftly suppressed by carabinieri in the heavily guarded court room, appeared unlikely to enhance the credibility of the man who, though also a minor defendant in the trial, is also the key prosecution witness.

Of the eight men on trial, only four were in court yesterday. Apart from Ali Agca himself, they were Mr Sergei Antonov, the Balkan Airways official who is alleged to have driven Ali Agca to Saint Peter's Square before the assassination attempt on May 13 1981; and Musa Cerdar Celebi and Omer Bagci, two Turkish alleged terrorists who are said to have been accomplices of Ali Agca.

Four other men are being tried in absentia. They are two officials of the Bulgarian Embassy, Mr Todor Ayvazov and Mr Ielio Vassilev, who are also said to have assisted Ali Agca and who left Italy before the arrest of Mr Sergei Antonov in 1982; and two Turks—Bekir Celenc, an alleged drug and arms trafficker presently in Sofia, the Bulgarian capital, and Oral Celic, an alleged terrorist, who is said to have also fired shots at the *Pope in St Peter's* Square.

BTA the Bulgarian news agency said the charges against Mr Antonov and the two other Bulgarians being tried in Rome, were "completely baseless" and that the men had nothing to do with terrorist actions. The agency said that 'hundreds' of staff from Balkanair airline demonstrated at Sofia airport in support of Mr Antonov.

In Moscow a committee for the defence of Mr Antonov was formed, while the Soviet news agency Tass called the trial in Rome s "frame-up" by Western intelligence agencies.

The court soon went into recess to discuss claims by the defending lawyers that the two Bulgarian diplomats could not be tried because they were covered by diplomatic immunity. The request was rejected.

In 1981 Ali Agca was given a sentence of life imprisonment for the attempted murder of the Pope. At that stage he claimed to have acted alone. Later, however, while in prison he produced evidence pointing to the complicity of the Bulgarian secret service and of fellow Turks in a supposed plot to kill the Polish-born Pope at the height of the Solidarity uprising in Poland.

Kohl and Mitterrand hold informal summit on SDI

BY RUPERT CORNWELL IN BONN

CHANCELLOR Helmut Kohl of West Germany and President François Mitterrand of France will hold an unusually important meeting today to seek to remove the misunderstandings which have lately bedevilled relations between their two countries, above all over the U.S. Strategic Defence Initiative (SDI).

This latest of ever-more-frequent Franco-West German summits has been billed as strictly informal, but it is likely to have a bearing on the forthcoming EEC summit in Milan at the end *of June, the prime task* of which will be to seek agreement among the Ten on further steps towards European integration.

Some progress towards clearing away the differences which emerged at the recent seven-nation Western economic summit here was clearly achieved at last week's talks in Paris by Herr Hans-Dietrich Genscher, the West German Foreign Minister. Officially both Paris and Bonn lately have been studiously playing down the difficulties between them.

However, the importance of re-establishing trust between the two has been illustrated by the unexpected switch of the summit's venue, away from the spotlight of Bonn to the quieter and less-accessible setting of Konstanz, close to the West German-Swiss border.

The omens for a successful outcome seem to have improved recently, not least because neither leader can afford another public display of their divergences. President Mitterrand has already ruled out formal participation by France on SDI. The West German attitude remains unclear, but Herr Khol appeared last week to moderate his previous enthusiasm by underlining the risks as well as the opportunities which the space-based defence scheme represents for Western Europe.

Bonn has ostensibly warmed to the idea of the European technological co-operation embodied by the Eureka proposals of Paris, which in some respects overlap with SDI research. The West Germans now look ready to see both programmes run side-by-side, although Eureka has hardly reached the outline stage.

Herr Alois Mertes, Minister of State at the West German Foreign Office, said yesterday the two countries had already reached "wide agreement" on Eureka, which did not mean that participants should be excluded from the American project.

Even so, it remains doubtful whether the Konstanz encounter will remove entirely French misgivings about West German Europeanism, despite the Chancellor's insistent, if imprecise, calls for a more united Europe.

Well before the problems thrown up by the economic summit in Bonn, suggestions had surfaced in Paris that Bonn was losing enthusiasm for the EEC. One area of friction *has* been further monetary and financial co-operation, including wider use of the Ecu; another was the threat by Bonn to use its veto powers to block a cut in cereal prices in the next EEC farm round.

Officials here, however, ascribe much of the tougher French line to internal political reasons. President Mitterrand, with his Socialists facing defeat at next year's key parliamentary elections, badly needs a European policy success. To achieve this, however, a united front with West Germany, France's most important Community partner, is essential.

Iberian premiers in Whitsun meeting

By Our Madrid Correspondent

THE prime ministers of Spain and Portugal, together with their respective ministers of economy and agriculture, spent the Whitsun weekend at an informal summit in the small Spanish village of Alcantara, close to the Portuguese frontier, and committed themselves to regular future meetings on a similar basis.

The theme of the summit was European enlargement. "Everything that affects Spain has *repercussions on Portugal, and* vice versa," said Sr Felipe Gonzalez, Spanish prime minister. "Because of this we want our development projects to be similar."

Sr Gonzalez's talks with Sr Mario Soares, the Portuguese Premier, followed a breakthrough agreement between the Spanish and the Portuguese foreign ministers at the end of last month which settled disputes over fishing rights and laid down a framework for increased bilateral trade.

Last month's agreements were reached under pressure from the European Commission which hinted it might be forced to arbitrate between Spain and Portugal if the two countries were unable to settle differences.

Among the topics informally raised were the need to encourage joint Spanish-Portuguese ventures and the possibilities of promoting the common frontier areas with European funds.

● *Earnings from tourism in* Spain in the first quarter of this year were \$1.3bn (£1.04bn), a 3.7 per cent rise in dollar terms on the 1984 figures for January-April, the Spanish tourism secretariat said

Oxygen leak blamed for Algeciras tragedy

BY TOM BURNS IN MADRID

OFFICIALS believe that the massive oil tanker explosions in the Bay of Algeciras on Sunday were caused by oxygen leaking into the hold of one vessel which was unloading highly volatile naphtha.

Two tankers sunk after massive explosions at the Gibraltar refinery which set the bay area ablaize with burning fuel. Yesterday the death toll of seamen and refinery employees stood at 22 and a further 11 were still missing.

Spanish Navy frogmen were finally able yesterday to commence salvage work and help piece together what happened. For 24 hours after the blasts salvage was prevented by the high temperature of the sea water.

It appeared that the 30,000 tonne Japanese owned and Panamanian registered tanker, Petrogen One, blew up when it had virtually finished unloading a 25,000 ton cargo of naphtha. The vessel jack-knifed into the air and seemed to have landed on top of a second tanker, the Spanish owned 8,000 ton Camponavia which was docked alongside it and had begun taking petroleum abroad.

The Camponavia exploded almost simultaneously, broke in two and sunk. The Petrogen One was discovered by frogmen to be on top of the Compansvia. There were still explosions underwater yesterday from the hull of the Petrogen One which had also snapped in half. Its stern and its bow jutted out of the waters.

Officials believe that either *oxygen leaked into the hold of* the Petrogen One or that the naphtha leaked out. One theory was that the Japanese vessel began overheating and vapourised its cargo. Some 2,000 tonnes of naphtha were believed to have been still aboard the Petrogen One when the explosion happened.

King Juan Carlos yesterday toured the bay area inspecting the rescue work. One of the heroes of the tragedy was an 18-year-old, the son of a refinery worker, who rowed out into the flaming sea and rescued 10 surviving crew members who were clinging to a buoy.

The disaster could have been far worse had the two tankers been fully loaded and had the flames reached the refinery itself where up to 170,000 tonnes of crude and derivatives are *stored. A third tanker narrowly* escaped blowing up thanks to the rapid work of a tug boat that towed it to safety.

Aside from the financial cost of the tragedy, which is conservatively estimated at Pta 1.5bn (£7m), and from the human toll, the disaster has reawakened controversy over safety margins at refineries. The Gibraltar refinery is owned by the Spanish petroleum company Cepsa and is located equidistantly from the British-held colony of Gibraltar and the town of Algeciras.

Less than a mile from the refinery is a low cost housing estate of some 3,000 units and the bay of Algeciras, known as the Campo de Gibraltar, is densely populated.

Industry and services, including the refinery, in the Campo de Gibraltar have received considerable government promotion over the years *as part of* a policy of isolating the economy of the neighbouring British colony.

Gorbachev calls for boost in income

By Patrick Cockburn in Moscow

The Soviet Union must increase its national income at an annual rate of 4 per cent if living standards are to rise Mr Mikhail Gorbachev, the Soviet leader, has said in a keynote speech outlining his economic programme. National income has recently risen by 3 per cent a year.

Members of the ruling Communist Party who do not go along with radical economic reform and "are an obstacle to the solution of these new tasks, simply must get out of *the way and not be a hind*rance," he said.

Mr Gorbachev's speech, made to Communist Party activists in Leningrad on May 17, but only recently broadcast, is the most radical criticism of the way in which the Soviet economy is run delivered by a Soviet leader for 20 years.

The reference to a 4 per cent growth rate in the national income being needed in the "present political circumstances" is presumably a reference to higher Soviet allocations for defence in the last year. Defence spending went up by only 2 per cent a year from 1976-83, according to U.S. estimates.

Speaking of the lack of consumer services in the Soviet Union Mr Gorbachev said "try to get your flat repaired. You will definitely have to find a moonlighter to do it for you—and he will steal the materials from a construction site." He blamed poor planning.

The increase in Soviet output is to come through greater labour productivity and better use of raw materials. The Soviet leader said that as long ago as 1966 during a visit to East Germany he had been "tremendously impressed" by the East Germans' determination to make their products competitive on the world market. Mr Gorbachev said the Soviet Union must do likewise. He singled out a number of enterprises in Leningrad making electric power generating equipment which he said "cannot stand competition on the world market."

The pungent style of Mr Gorbachev's speech, delivered at the Smolny Institute in Leningrad which was Lenin's headquarters during the 1917 revolution, is in sharp contrast to the wearisome speeches delivered by his predecessors, Mr Leonid Brezhnev and Mr Konstantin Chernenko. Its broadcast has had a significant political impact.

Mr Gorbachev underlined the cost to the Soviet Union of most of its natural resources being in Siberia. To reach them we must build towns and roads, he said. This is costly. "In some 10 years expenditure per tonne of additional petroleum has increased 70 per cent." Up to 22m tonnes of oil could be saved if the older thermal power stations were brought up to modern standards, he said.

To increase labour productivity machine tools in use had to be bought up to date, he said. Some 30-40 per cent of equipment in use in the Soviet Union has been operating for 15-20 years according to one study.

Mr Gorbachev's strong warning that leading party members who do not like the economic changes now envisaged must go is particularly significant since a new Central Committee, members of whom dominate political life in the Soviet Union, will be selected this Autumn before the next Party Congress in February 1986.

Mitsotakis 'will seek court ruling' on fate of presidency

BY ANDRIANA IERODIACONOU IN ATHENS

MR Constantine Mitsotakis, the Greek Conservative Opposition leader, said yesterday that if his New Democracy party wins the June 2 general elections it will ask the Council of State, a higher judicial body which is the closest institution Greece has to a constitutional court, to decide the fate of President Christos Sartzetakis.

The *President rejected last* week a call by the Conservatives to resign, should they topple the present Socialist Government on June 2. The Socialists nominated and elected Mr Sartzetakis to the presidency with the help of the Communist opposition in a parliamentary vote last March.

The elections were declared unconstitutional by New Democracy on the grounds that the required majority was only just secured, thanks to the vote of the acting president, a Socialist Deputy, whose right to participate in the presidential elections was in doubt under the constitution. They also accused the Government of violating the prescribed secrecy of the ballot by using coloured voting slips.

Hong Kong to investigate Bank of Bumiputra

By David Dodwell in Hong Kong

HONG KONG's Independent Commission Against Corruption (ICAC) is to investigate the affairs of Bank Bumiputra of Malaysia and its local subsidiary, Bumiputra Malaysia Finance, following a request from the bank's present chairman.

Bank Bumiputra, Malaysia's largest bank, is at the centre of the country's biggest-ever banking scandal. Petronas, the state-owned oil company, in September last year was *ordered to rescue the bank by* injecting into it \$1.1bn (£793m). Its difficulties were largely due to bad debts outstanding from Carrian Investments, the Hong Kong property and shipping group

Virata plans $400m loan drawdown in early July

BY SAMUEL SENOREN IN MANILA

THE PHILIPPINES expects to draw in early July the first \$400m (£317m) tranche from the \$925m new money agreed with creditor banks last week and to make initial use of the \$3bn revolving trade credit also agreed, Mr Cesar Virata, Prime Minister, said yesterday.

Mr Virata said the new loans and restored trade lines would propel the Philippine economy to a growth rate of as much as 1 per cent in 1986. Last year, the economy contracted by 5.4 per cent. About \$250m of the initial drawdown would be used to update interest payments on commercial loans which had been 75 to 90 days in arrears since late 1983.

The balance would be credited to the foreign reserves which were reported by the central bank to stand at \$950m as of last week.

Mr Virata also said that some \$1.6bn of the trade lines would be immediately available to importers but the lenders are to choose which Philippine banks to deal with. The Central Bank can insist that funds be made available to a borrower, but these loans will then be treated as public sector debts guaranteed by the Government.

"The new money and trade lines will only be made available after the International Monetary Fund has completed its review of the Philippines economy at the end of this month.

Mr Virata said generally the IMF has been satisfied with the Philippines' economic performance, although certain targets have had to be relaxed. One of these is the level of reserves, which had been blamed for the tight money situation and abnormally high interest rates during the past months.

The tight money situation was itself held responsible for the unusual strength of the peso, which has gained 15 per cent against the dollar since early this year.

Under the relaxed programme, the level of reserves has been allowed to expand from Pesos 31bn (£1.46bn) to Pesos 34.4bn for end-May, Pesos 35.2bn for end-July, Pesos 35.8bn for end-September and Pesos 38.4bn for end-December.

Mr Virata is confident that the Philippines would pass the test when the IMF executive board meets on May 31 to assess its economic performance during the past five months.

● President Ferdinand Marcos has described as "unthinkable" a suggestion that he step down to pave the way for a new presidential election, but he held out the possibility that the scheduled 1987 presidential vote could be advanced, **AP-DJ reports from Manila.**

"I cannot foresee how you can . . . shorten the tenure of the President without a constitutional amendment. Of course, the idea of a voluntary resignation before the end of the tenure is unthinkable," President Marcos said in a television interview.

Brazil starts austerity talks with IMF

By Ann Charters in Sao Paulo

BRAZIL AND the International Monetary Fund started talks in Brasilia yesterday in what is certain to be a tough battle to hammer out an austerity programme.

On the eve of the two sides getting down to business, M Jacques de Larosiere, the director general of the IMF, told the country's creditor banks that he was "encouraged by the positive attitude of the Government."

Based on earlier preliminary encounters between Brazil's government and the IMF, the two sides are far apart on at least two problematic issues; that of inflation and monetary expansion targets.

Brazil's position defined by the Finance Ministry is to push for more realistic targets. It feels those agreed to by the previous government were too tough.

A newly-created commission, entrusted with negotiating with the IMF, is pushing for a 1985 inflation rate target of 200 per cent, well above the 120 per cent agreed to in Brazil's last negotiations with the IMF.

Sig Sebastiao Marcos Vital, the Finance Ministry's secretary general, leading the commission, is expected to argue that expansion of the monetary base and the money supply as measured by M1 be contained at 150 per cent for 1985 rather than 60 per cent as agreed to last December with the IMF.

Racial easing in S. Africa

BY ANTHONY ROBINSON IN JOHANNESBURG

THE SOUTH AFRICAN Government's policy of abolishing "negative and discriminatory" aspects of apartheid legislation with a high symbolic profile has taken another step forward with a pledge by Mr Chris Heunis, Minister of Constitutional Development, to abolish the Prohibition of Political Interference Act during this parliamentary session.

The Act, which was introduced in 1969, led to the demise of the former multi-racial Liberal Party, and formalised the racially separate nature of South Africa's political parties. Its abolition will once again permit multi-racial political parties.

It means that blacks, who have no voting rights at a parliamentary level, will be able to join political parties represented in the racially separate white, mixed race coloured and Asian houses. But they will remain unable to vote for these parties or hold elected office in the respective parliaments.

The principal practical effect of abolition in the immediate future is expected to be on the Progressive Federal Party (PFP), the opposition party in the white house of assembly which numbers many former Liberal Party supporters in its ranks. The PFP is already exploring ways of co-operating with ideologically similar parties in the coloured and Asian houses of parliament.

Meanwhile the Government is pressing ahead with re-organisation of local government which entails abolition of existing provincial councils and the creation of regional service councils on which black local councillors will be represented. The new councils will channel part of the tax revenue from businesses and services in white areas towards infrastructure development in black townships.

● **Angola says it may ask the United Nations Security Council to take up the matter of South African commandos operating in Angolan territory, AP reports from Luanda.**

Angola says it killed two South Africans and captured a third member of a commando group it said was preparing to sabotage the U.S.-Angolan Malango oil complex in Northern Cabinda province last Tuesday.

Sr Abelino de Almeida, the Government's information officer, said the captured South African, identified by Pretoria as Mr Winan Petrus du Toit, would be presented to the Press. He is being treated in a Luanda hospital for a gunshot wound in the shoulder.

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Iran to impose curbs on oil barter deals

BY RICHARD JOHNS

IRAN HAS decided to demand that customers for its oil under barter deals should refine the oil in their own countries and solely for their domestic markts, according to a statement by Dr Mohammed Gharazi, Minister of Oil.

The condition, if it proves enforceable, could remove a significant proportion of Iran's exports from the spot market and will be welcomed by other members of the Organisation of Petroleum Exporting Countries (Opec).

An increase in barter sales is said by oil traders to have been largely responsible for a big increase in Iran's April output, estimated at 3m barrels a day (b/d) or more, far in excess of its 2.3m b/d quota under Opec's production sharing accord aimed at limiting the total to 16m b/d.

Iran is negotiating a countertrade deal with Voest Alpine worth \$2bn (£1.6bn) in exchange for food. The Austrian company is already purchasing crude from the National Iranian Oil Company at a rate of 210,000 b/d.

Recent indications bave been, however, that Iran is attempting to move away from barter deals offering instead prices linked to spot market rates — in contravention of Opec accords — to ensure a steady flow of exports under contracts with a validity of no less than six months.

In particular, it is attempting to ensure an outlet of 300,000 b/d through agreements with three Japanese customers Marubeni, Mitsui and Co and C. Itoh — according to recent reports by Petroleum Intelligence Weekly.

Mr Gharazi described the imposition of the Opec ceiling of 16m b/d and the decision to monitor output, now being implemented, as having been "constructive in stabilising the market and strengthening the market," according to the statement issued by the official IRNA news agency in Tehrao.

In practice, Iran would probably argue that any excess output in April merely compensated for a shortfall in previous months, not the least because of Iraqi air attacks on oil traffic to and from the country's main export terminal.

On Sunday the Saudi Arabian Ministry of Petroleum and Mineral Resources denied that it was preparing for an oil price cut, stressing its commitment to Opec's official price structure.

● In Oslo, Statoil, the Norwegian state oil company, denied that it had reduced its official crude contract prices for June delivery, but said a decision would be taken next week.

Sudan ends Khashoggi joint venture

By Our Middle East Staff

THE NEW Sudanese regime led by Gen Abdul-Rahman Swareddahab, which seized power et the beginning of April, bas ordered the dissolution of the 50:50 joint venture company between the state and Mr Adnan Khashoggi, the Saudi Arabian entrepreneur, formed to develop and control the country's oil and mineral resources.

At the weekend, the official Sudanese News Agency (Suna) quoted Gen Swareddahab as saying that the agreement between former President Jarfar Nimairi, ousted in the April 6 coup, and Mr Khashoggi setting up the controversial National Oil Company of Sudan (Nocs) was the "peak of political, administrative and financial corruption."

For his part, Mr Khashoggi earlier this month refuted Arab newspaper reports suggesting impropriety in his dealings with Sudan. He said that "the status of that contract is entirely in the hands of the new Government and will abide by its decision, whatever it may be."

The creation of Nocs in September last year was seen as an implicit threat to oil companies already operating in Sudan and possibly a ploy to cajole Chevron, together with its partners Royal Dutch/Shell and the International Energy Development Corporation, to resume development of the field at Beniut in the Upper Nile province which bad been suspended because of more activity.

Crisis deepens at troubled African airline

By Peter Blackburn in Abidjan

AIR ARIQUE, the financially troubled Abidjan-based multinational airline, is faced with a fresh crisis following the refusal of 48 African pilots and mechanics to sign new contracts involving salary cuts of about 50 per cent.

The cuts are part of a stringent austerity plan approved by the heads of state of the 10 French-speaking member states last March.

Nearly 60 French pilots were sacked following a strike last September by just over half the company's 216 pilots and mechanics.

However, the striking African pilots were ordered back to work by their Governments pending the signature of new contracts. The pilots complain that the new contracts are illegal and that they are being "scapegoats" for the company's alleged bad management and financial difficulties.

The pilots point out that the management's action will delay its policy of Africanising flying crews.

Meanwhile a new head of Air Afrique is doe to be formally appointed at a general meeting in Abidjan on June 25. He is expected to be M. Auxence Ikonga, who currently manages Congo's state oil company Hydrocongo and is a former foreign minister.

UAL pilots' strike talks collapse

BY TERRY DODSWORTH IN NEW YORK

A TENTATIVE settlement of the one-week-old pilots' strike at United Airlines collapsed at the weekend, leaving the two sides apparently further entrenched in their bitter dispute over a proposed two-tier wage scale.

The Chicago-based carrier, the U.S.'s largest airline, said after the failure of talks that it would press ahead with plans to restore 25 per cent of its services. The union claimed that its picket lines were holding solid, with almost 95 per cent of its 5,200 pilots refusing to return to work, and 89 per cent of the company's air hostesses also joining the walkout.

The break-down of the discussions plunges the two sides into what could be a crucial dispute over the future of the two-tier wages patterns being steadily extended in the U.S. airline industry.

Under these systems new staff are hired at much lower rates than existing employees, while accepting a slower progress to current wages levels. Pilots accepted a two-tier system at American Airlines last year, but they and other unions appear to be making a stand at United because of its symbolic importance as the largest employer in the industry.

The deadlock emerged at the weekend following an apparently successful intervention by a federal labour mediator.

No details of the compromise suggested by the mediator have been given, but both sides appeared ready to accept it when the discussions hit trouble again over return-to-work issues.

One of the unresolved problems concerns the union's opposition to allowing non-striking pilots to retain any seniority they have achieved by continuing to fly during the dispute. The other is over a demand by Alpa, the pilot's union, that 500 pilots trained before the dispute who have refused to cross picket lines will not be penalised in a return to work. The company says the union has no right to represent htese pilots.

Alpa said yesterday that no further talks had been scheduled this week, and that 15,000 machanics in the International Association of Machinists wer threatening to join the strike if the company went ahead and brought in 65 replacement pilots as it bas threatened to do.

AMC starts closing Wisconsin plant

FINANCIALLY troubled American Motors (AMC) has taken initial steps toward closing its only U.S. car plant at Kenosha, Wisconsin, which could jeopardise the jobs of more than 5,000 workers, Reuter reports from Detroit.

But the fourth largest American car maker, which says it is burdened by the industry's highest labour costs for building cars, has also agreed to hold talks with the United Auto Workers (UAW) union that could avert the plant's closure.

Industry analysts say the company's threat to close the Kenosha factory has become the focal point in AMC's efforts to cope with an increasingly difficult decision in the American car market.

AMC at the week-end despatched advance notices required by law of its intent to close the Kenosha car plant by mid-1986. At the same time, it relaxed its tough stance on holding formal talks with the union and said it was ready to begin bargaining on a new labour contract as soon as June 3.

AMC, in which the state-owned French car group Renault is controlling shareholder, has moved to cut expenses on several fronts in the face of a \$29m (£23.2m) loss in the first three months of 1985 on top of losses since 1980 of more than \$600m.

Renault's willingess to provide additional cash for its U.S. affiliate is also in question in view of the French group's 1984 loss of \$1.35bn.

Ontario Government faces defeat

By Bernard Simon in Toronto

RELATIONS between the Canadian Government and the country's 10 provinces are likely to be complicated by the imminent downfall of the progressive Conservative administration that has ruled the province of Ontario for the past 42 years.

The province's two opposition parties, the Liberals and New Democrats, have agreed to join forces to topple the Conservative Government as soon as possible after the provincial legislature reconvenes in early June. Provincial elections earlier this month left the Conservatives as the largest legislature, but with fewer seats than the combined opposition.

The New Democrats, whose support comes mainly from trade unions and university campuses, have decided after several weeks of bargaining to support the Liberals, rather than the Conservatives.

Raflecting a mood which appears to bave contributed to the Conservatives' poor election performance, New Democrat leader, Mr Bob Rae said it was time for a change in Government after 42 years of Tory rule.

With a third of Canada's population and almost a half of its manufacturing capacity, Ontario plays an influential role in shaping federal government policies.

Rabin backs PoW swap

BY DAVID LENNON IN TEL AVIV

THE ROW over last week's prisoner of war exchange, in which Israel traded over 1,000 Palestinians for three Israeli soldiers, spread to the Knesset plenum yesterday, when Mr Yitzak Rabin, the Defence Minister, presented the House with the Government's defence of its decision.

Rowdy heckling punctuated the minister's attempts to justify the prisoner swap which allowed some 800 convicted Palestinians to return to their homes in the occupied West Bank and Gaza Strip.

Mr Rabin said the Government had followed the precedent set by previous Governments, all of which had treated the safe return of Israelis held by Arabs as a primary duty.

He noted that the previous Government, headed by the right-wing Likud bloc, had released 4,600 Palestinians in exchange for six Israelis held by the Palestine Liberation Organisation's Fatah wing.

This set a precedent which made it impossible to persuade the Popular Front faction of the PLO to settle for a lower ratio of Palestinian prisoners for Israeli prisoners.

Most critics complained that too many Palestinians convicted of murder and terrorism had been set free.

Palestinians seek refuge from a storm of killing

BY NORA BOUSTANY AND TONY WALKER IN BEIRUT

HUNDREDS of refugee families huddled in a basement garage beneath a block of flats awaiting meagre food rations. They were mainly women and small children who had fled the fighting in nearby Sabra and Chatilla on the edge of Beirut.

Some of the women in the shelter at Wata Musseitbeh under the protection of the Druze Progressive Socialist Party of Mr Walid Jumblatt who has tried to remain neutral in the fighting, were hysterical because they had lost husbands, sons and homes.

"They took away my two sons," sobbed Fatimah Sharkawi. "They had no weapons, but they took them away." Mrs Sharkawi, dressed in a peasant's headscarf, had no idea where her sons, aged 20 and 22, had been taken.

Mr Abu Mujahed, a Palestinian spokesman, said that hundreds of young men and women were missing. He claims he saw six young Palestinian men who were returning to the camps at the start of the fighting, put up against the wall of a mosque and shot by Amal Shia Moslem militiamen.

Amal is vigorously denying the allegations. Mr Aly Hamdan, an Amal spokesman, yesterday said all reports of mass killings were unconfirmed rumours. "This is unIslamic. In our religion we do not kill and mutilate people," he said. But allegations of massacres are widespread.

Western reporters trying yesterday to film a family leaving the Sabra camp with belongings and bedding saw Amal fighters stop a young man and confiscate his papers.

"You will not be needing this," they told the Palestinian, when he asked for his passport. He was taken behind a garbage pile. Shots were heard, and the gunmen returned without him. Witnesses have said Palestinian men leaving the camps were being shot at point blank range.

Mrs Fatimah Masri from Chatilla claimed that Amal militiamen destroyed a mosque in which Palestinian wounded had taken refuge. "Amal took their comrades and left the others (Palestinians), then they destroyed the mosque over the heads of those left behind," she said.

Reporters were not able to go into the camps to verify the allegations.

The most tragic story told at Wata Musseitbeh was that of Mrs Umm Faour, who has "lost her mind," refugees said. Amal militiamen bulldozed her house over her four children.

The Palestinian refugees from Sabra and Chatilla looked drawn and hungry. "They are burning and looting our houses, carting away everything we own," complained a young man.

Mr Abu Mujahed described the first serious day of fighting – Monday last week – as "a crazy day." He said Amal militiamen arrived behind two Lebanese Army armoured personnel carriers which used their guns to blast their way into the Daouk quarter at the northern entrance to Sabra. "I felt no one could stay alive at that moment."

"It is not only Sabra and Chatilla where Palestinians are in danger," said Mr Mujahed. "Every Palestinian in Beirut is unsafe except those under the protection of the (Druze) Progressive Socialist Party."

Egypt seeks fresh oil orders

BY DAVID LENNON IN TEL AVIV

THE FIRST Egyptian cabinet minister to visit Israel in three years, Mr Abdul Hadi Kandil, the Minister of Energy, arrived yesterday to discuss increasing oil sales and the probability of counter purchases to off-set the \$400m spent annually by Israel on Egyptian oil.

The minister will also try to persuade Israel to buy more oil from Egypt, which is a less expensive source for Israel than its other regular suppliers, Mexico and Norway.

Mr Kandil'a visit marks a further thawing in relations between the two countries. This is presumably also underlined with the verbal message which he brought from President Hosni Mubarak to Mr Shimon Peres, Israel's Prime Minister.

Egypt provides about 25 per cent of Israel's annual oil needs under an agreement which is part of a peace treaty signed between the two countries in 1979.

Trade in other goods between the two countries is virtually non-existent. Israel would like to see this situation remedied, and one of the proposals which will be made to the visiting minister is that Egypt buy petrochemical products of which Israel currently has a surplus.

HK publishes proposals on shipping register

BY DAVID DODWELL IN HONG KONG

THE HONG KONG Government has published a consultative paper on plans to establish an autonomous shipping register, a move made certain last year when the terms were revealed under which China would resume sovereignty over the territory in 1997.

Officials want to establish the register before 1990 "to give confidence to the shipping industry and to ensure a smooth transition in 1997."

Hong Kong is now a British port of registry, subject to British standards and conventions. When the change of sovereignty became certain, it was clear this could not persist aftar 1997. But Peking agreed that, in line with the policy of "Hong Kong people ruling Hong Kong," it would not be appropriate to insist on locally based ships flying the Chinese flag.

With about 820 ships currently registered, accounting for about 60m dwt and carrying 9m passengers a year, Hong Kong's share of the world fleet is about 12 per cent. Officials were concerned that uncertainty about tha future might prompt some shipowners to register elsewhere.

Mr Gerry Higginson, Hong Kong's Secretary for Economic Services, explained at the weekend that the main aim of legislation establishing the autonomous register would be:

- To enshrine standards and obligations in local legislation;
- To ensure that it should not be seen as a flag of convenience;
- To create a distinctive Hong Kong flag;
- To recover all costs by means of fees or dues;
- To minimise red tape.

To avoid Hong Kong becoming a flag of convenience, legislation will call for "a genuine" link between the vessel and Hong Kong. The company owning it will have to be incorporated in the territory. This will disqualify about 40 per cent of the tonnage on the present register—those owned by companies registered in Britain or other British dependent territories.

A Hong Kong-registered vessel requires a British master, chief officer, and chief engineer. Under new legislation, the master will have to be able to reside in Hong Kong. Officials expect a transition period will be necessary to meet this change, but call for more locally based training of ships' officers.

Restrictions on the registration of specialised vessels will be called for, because of "special problems for which Hong Kong may not be technically equipped." This will include nuclear ships, officials said.

World Economic Indicators

INDUSTRIAL PRODUCTION
(1980 = 100)

					% change over previous year
	Apr. 85	Mar. 85	Feb. 85	Apr. 84	
U.S.*	165.4	165.8	165.3	162.1	+2.0
	Mar. 85	Feb. 85	Jan. 85	Mar. 84	
UK	107.0	105.0	104.6	103.2	+3.7
	Feb. 85	Jan. 85	Dec. 84	Feb. 84	
W. Germany	102.9	103.4	100.2	99.2	+3.7
France	101.2	98.6	100.9	99.3	+1.9
Italy	97.8	91.7	97.6	90.7	+7.8
Japan	120.9	120.0	120.2	114.2	+5.8
	Jan. 85	Dec. 84	Nov. 84	Jan. 84	
Netherlands	109.1	100.3	101.6	101.3	+7.7

* 1967 = 100.

Source (except U.S., UK, Japan): Eurostat

SHIPPING REPORT

Crude oil charter markets slacken

By Lynton McLain

SHIPPING MARKETS were slack ahead of the holiday weekend, with only a modest increase in orders for crude oil tanker tonnage reported at the end of the week.

There was almost no pressure from companies to charter tonnage and cargoes until Friday. The rate for very large crude carriers dropped to approximately Worldscale 22 for 225,000 tonne vessels from the Arabian Gulf to Japan. Galbraith's shipbrokers said there was no evidence of any business being concluded at Kharg Island, Iran.

Elsewhere, VLCC cargoes were reported from Mediterranean ports, including Marsa al Brega and Sedi Kerir, but the absence of crude oil trade from the Arabian Gulf to Europe has curtailed the availability of vessels through the Suez Canal.

Smaller orders were arranged including a 90,000 tonnes cargo from the Gulf to the Far East at Worldscale 52.5. Total, tha French oil company, paid Worldscale 44 for the movement of 120,000 tonnes of crude oil, Gulf/UK for the continent, Mediterranean. In the North Sea markets, vessels for early loading are scarce.

On the sale and purchase market, conditions were little changed at tha end of the week. In New York buyers based in China were reported to have bought two Panamax bulk carriers.

Italians to build Soviet tanneries

THE ITALIAN COMPANY Conceria Cogolo has signed two turnkey contracts valued at L500bn (£202m) to build two leather tanneries in the Soviet Union, Patrick Cockburn reports from Moscow. They are to be completed in three years, and will use Italian technology and Soviet raw materials.

The leather plants will be built in Ryazan, south-east of Moscow, and Minsk, capital of the western republic of Byelorussia.

Singapore fights NZ trade reforms

BY CHRIS SHERWELL IN SINGAPORE

A SIMMERING row between New Zealand and Singapore has burst awkwardly into the open over a decision by Wellington to end the island state's trade preferences as part of a radical import liberalisation programme.

By its action New Zealand has become the first country to terminate Singapore's privileges under the Generalised Scheme of Preferences (GSP). It insists Singapore will be a net beneficiary of the reforms, but is plainly embarrassed by its failure to consult the government adequately in advance.

Singapore, though barely affected by the changes in material terms, sees the move as an alarming precedent and is campaigning strongly against it through the six-nation Association of South East Asian Nations (Asean), which groups Singapore, Indonesia, Malaysia, Thailand, tha Philippines and Brunei.

The row stems from the New Zealand Labour Government's decision to dismantle the country's distorting import protection regime in order to restructure its domestic industry. Apart from ending an import licensing scheme and, later, lowering tariffs, the reforms inclnde a significant change in the New Zealand GSP.

Under the change, countries with a per capita gross national product (GNP) lower than 70 per cent of New Zealand'a will no longer be eligible under the GSP. Singapore, with a per capita GNP of around US$6,200 (£4,800), is affected; so are Brunei, and countries like Saudi Arabia, Kowait and Bahrain

Singapore is alarmed because the decisioo may be used as a precedent by important trading partners like the U.S., the European Community and Australia. Despite its rising per capita GNP and its voluble support for free trade principles, Singapore has campaigned for years in these countries against losing its GSP privileges.

So far, its campaign has worked, helped by its special argument that a more accurate benchmark should be "indigenous per capita GNP" to take account of the large foreign element in the economy.

In the case of Singapore's trade with New Zealand, oniy about 15 per cent of the country's NZ$210m (£75m) worth of imports last year were eligible for GSP assistance. Fully 81 per cent of these consisted of oil or oil prodncts, and another 7½ per cent was machinery and transport equipment.

Bnt Singapore says a principle is involved and that it effects Arean as a whole because Brunei faces the same problem.

Using its chairmanship of the Asean committee on tourism and trade, the Government has enlisted the support of its Asean partners. Later this week a formal request will be lodged with Wellington asking for a reinstatement for both Singapore and Brunei.

The New Zealand government, having failed to give enough notice in the first place, has responded once by postponing the implementation of its decision from March until July. But it insists that the gains to Singapore from easier access to the New Zealand market will far outweigh the losses.

New Zealand says Singapore is so economically developed that it would bave failed the 70 per cent test even if "indigenous" GNP figures were used. It also rejects the idea of using an Asean GNP figure since the General Agreement on Tariffs and Trade (Gatt) code does not permit it.

New Zealand says Singapore's worries about precedents are unfounded because countries like tha U.S. or those in the EEC, even if they adopted a similar policy, have a far larger GNP than New Zealand.

SINGAPORE'S Trade Development Board, which promotes the island state's exports, opens its first UK office this week in a further expansion of its international presence since being formed in 1983 our South-East Asia Correspondent writes. As Singapore's ninth largest trading partner, and its largest among the EEC countries, Britain is seen as an important market for local exporters. The TDB also believes Britain can help Singapore achieve its goal of becoming a high-tech "brain centre," buying and selling information and services for the whole region.

U.S. steel output falls 12.5%

BY IAN RODGER

U.S. STEEL output has fallen 12.5 per cent in the first four months of 1985, offsetting healthy increases in Europe and Japan, according to the International Iron and Steel Institute (IISI).

Total steel prodnction in April in the West was 145.4m tonnes, 1.3 per cent lower than in the same period in 1984.

The figures confirm the continuing difficulties of the U.S. steel industry with sliding demand and a sustained level of imports attracted by the high value of the dollar. Last year, the U.S. negotiated import quotas with most major steel producing countries in a bid to stem the flow, but it appears thal many countries bave been using up most of their 1985 quota in the first half of the year, perhaps in anticipation of softer demand in tha second half. Most major U.S. steel producers made losses in the first quarter and reported a lower trend in orders.

U.S. output of 7.1m tonnes in April was 13.3 per cent lower than in April, 1984. EEC production was up 5 per cent to 10.2m tonnes in the EEC and 3.5 per cent up in Japan to 9.1m tonnes. Total production in the West in April was 37m tonnes, almost unchanged from a year earlier.

The figures are collected from 30 countries, representing 97 per cent of world production.

- The IISI's annual league table of world steel producers shows the recovery last year made by European steelmakers, such as Thyssen of West Germany and Finsider of Italy, belped by strong exports to the U.S. Brilish Steel slipped a rank, because it was unable to participate in the recovery. This was partly dne lo the effects of the miners' strike and partly due to fears of retaliation by the U.S. to exports of some of its products.

THE WORLD'S LEADING STEELMAKERS
(1984)

Company	Production 1984 (m tonnes)	Production 1983 (m tonnes)	Rank 1984	Rank 1983
Nippon Steel (Japan)	29.4	26.9	1	1
United States Steel (U.S.)	14.3	13.4	2	2
Finsider (Italy)	13.5	12.2	3	4
British Steel	12.7	12.7	4	3
Nippon Kokan (Japan)	12.5	11.4	5	5
Thyssen (W. Germany)	11.7	10.0	6	8
Sumitomo Metal (Japan)	11.3	10.3	7	7
Kawasaki Steel (Japan)	11.3	10.4	8	6
Bethlehem Steel (U.S.)	11.0	9.7	9	9
Usinar (France)	10.2	9.0	10	10

Source: International Iron and Steel Institute

Canada urged to act on pharmaceuticals

By Bernard Simon in Toronto

The Canadian Government has been urged to make concessions to multinational pharmaceutical companies on the compulsory licensing of their patented drugs to generic manufacturers.

Compulsory licensing, introduced in 1969 to hold down medicine prices, allows local manufacturers to produce well-known prescription drugs under generic brand names long before patents expire.

An official commission of inquiry has proposed that the compulsory licensing system be retained, despite strong protests from foreign companies and governmenments.

Tha commission, headed by Toronto Economist Professor Harry Eastman, recommends that the royalty paid by generic manufacturers to patent holders should be raised from 4 per cent to 14 per cent. It also suggests that the original patent holder be allowed exclusive marketing rights for four years after its drug is approved for sale.

Venezuela invites telephone deal bids

By Joe Mann in Caracas

THE VENEZUELAN state telecommunications company, Cantv, has invited nine international companies to offer bids on the largest telecommunications contract ever sought in Venezuela.

Cantv asked for teoders on supplying 1m telephone lines using digital technology, the installation of a factory in Venezuela for assembling—and eventually building—digital telephone switching equipment and a variety of support equipment.

The companies invited to participate were: Alcatel-Thompson, L. M. Ericsson, Northern Telecom, Italcom, Att-Philips, ITT, Fujitsu, Nippon E lectric and Siemens. Cantv decided to limit bids to a select number of international companies which already have an established reputation in communications, thus avoiding potential offers from a flock of smaller, less experienced companies.

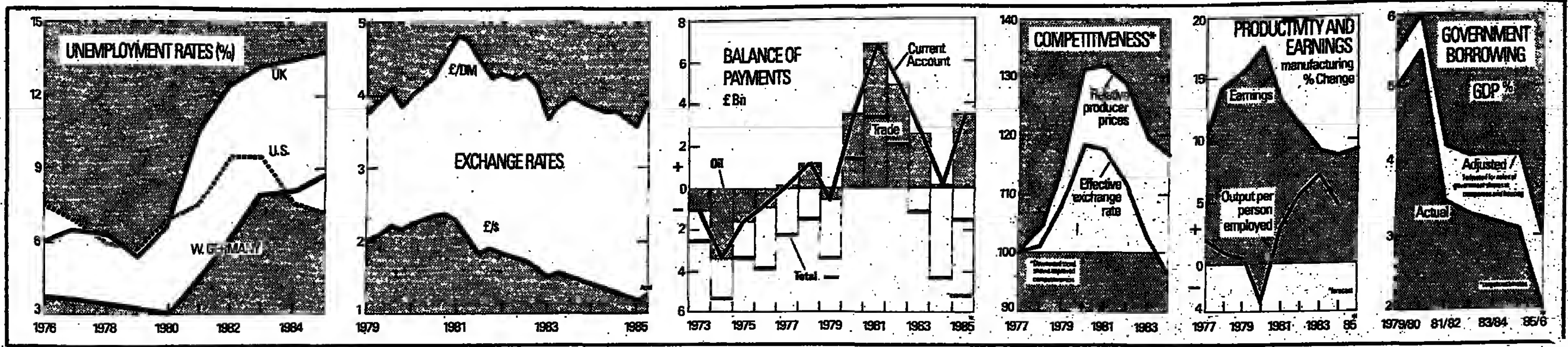
No estimate was made on the potential cost of the contract, but Cantv expects to invest hundreds of millions of dollars on expansion plans which will cover the next five to 10 years.

In February this year Cantv told ITT and Ericsson that it had decided not to go ahead with contracts signed under the previous Government, which left office in early 1984.

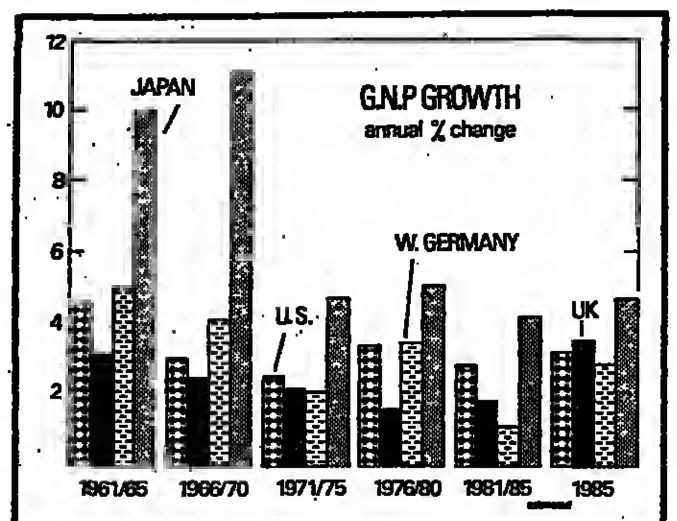
The two companies had signed agreements with the state telephone company in 1981 covering the acquisition of 380,000 telephone lines (60 per cent from Ericsson and 40 per cent from ITT) and other equipment.

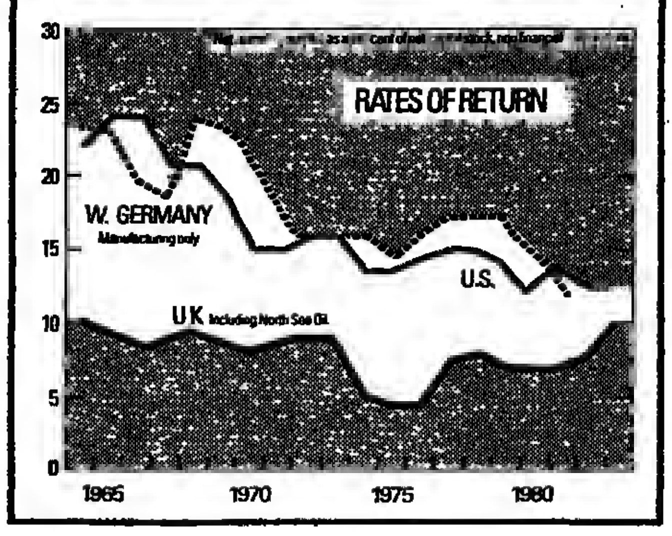
But Congressional investigators here objected to tha contracts, on grounds that some of the hybrid equipment to be purchased would soon become obsolete, that prices were too high, that no financing plan was included and that there was not sufficient competition for the contracts among international companies.

STATISTICAL TRENDS : UK ECONOMY



UK growth continues despite a rise in unemployment





THE UK economy has entered its fourth year of economic growth, and inflation has fallen from an annual rate of 18 per cent in 1980 to an undertying rate of about 5 per cent. However, unemployment continues to grow and real interest rates (roughly indicated by interest rate minus the rate of inflation) have risen to 8 per cent.

Growth in 1983 came mainly from consumption expenditure which slackened in 1984, but the slack was taken up by increases in investment and export growth.

Compared with the previous recovery of 1975 to 1979 there has been o stronger rise in total domestic demand. However, while the growth of consumer expenditure in the the mid-seventies came from growth in real personal disposable income, the current growth in consumption has come largely from a foll in the savings ratio of about 3 percentage points.

Although inflation fell to 4.6 per cent in 1983, it has crept up again with an expected final figure of nearly 6 per cent in 1985. This compares with expected inflation rates in 1985 of 3.9 per cent in the U.S. and 2.3 per cent in West Germany.

Unemployment in the UK, at 13.5 per cent of the total labour force, is now almost double the U.S. rate of 7.2 per cent, and there is little evidence of a decline.

Earnings have continued to grow by several percentage points faster than the rate of inflation and at a greater rate than in the U.S., West Germany or Japan. Although UK productivity increased at an annual rate of between 6 and 7 per cent in 1982 and 1983, it slowed in 1984. The substantial gains in productivity have been largely the result of o shake-out in the labour market.

The UK's historical relatively poor record on productivity has often been blamed on the lack of investment. Although the UK's ratio of overall investment to GDP is lower than that for the U.S. and West Germany (by about 5 percentage points), if residential investment is removed, then the UK's investment share has been similar to that of the other major industrialised countries.

A recent OECD report on the UK economy casts some interesting light on possible reasons for the UK's relatively poor productcity. Indications are that the UK does not exploit its capital invostment as efficiently as other countries—o higher rate of net investment is required to generate additional output. Also, the rate of return on fixed capital is signifanctly lower.

The UK, like other European countries, has improved its competitive position against the U.S. as a result of the substantial appreciation of the dollar.

The UK's overall competitive position has improved in recent years, but that position is still less favourable than in the 1970s. It is expected that 1985 will be the six consectuve year in which the UK will generate a surplus on the current account of the balance of payments: but in 1983 the trade surplus went into deficit as the surplus on oil no longer offset the deterioration of the non-oil trade balance, particularly on manufactures.

Increased competitiveness enabled exports to the U.S. to double in value between 1980 and 1984.

Although government expenditure has increased in real terms, the public sector deficit (PSBR) has fallen from 5.5 per cent of national income in 1980-81 to 3.1 per cent in 1984-85 with a target figure of 2.0 per cent in 1985-86. When account is taken of sales of government shares in public companies and in housing there has been little change between 1982 and 1985 in the deficit as o percentage of GDP. Asset sales raised £3.5bn in 1984-85.

SAVINGS RATIO

1970	9.8	78	13.1
71	8.2	79	14.1
72	10.3	80	15.2
73	11.9	81	13.5
74	12.5	82	12.9
75	13.3	83	16.9
76	12.6	84	11.5
77	11.6		

Source: C.S.O.

INTEREST RATES*

	U.S.	UK	West Germany	Japan
NOMINAL				
1980	17.6	14.8	10.2	9.8
1981	12.8	15.7	10.5	6.3
1982	8.8	10.5	6.2	6.8
1983	9.8	9.3	6.3	9.4
1984	9.2	9.9	5.8	6.3
1985†	9.1	13.9	6.3	6.3
REAL (Nominal-Inflation)				
1980	5.1	−0.6	4.9	2.0
1981	3.2	3.6	4.0	2.2
1982	4.3	4.3	1.5	4.4
1983	5.9	4.0	3.2	4.7
1984	4.3	5.4	3.8	3.6
1985†	5.5	6.5	4.0	4.8

* Bond equivalent yields on major money market instruments. † Latest.
Source: Morgan Guaranty, IMF

INVESTMENT SHARES

Non-Residential Investment
% GDP

	1955/62	63/70	71/77	76/83
UK	13.2	14.7	15.3	14.9
U.S.	12.9	14.0	13.0	11.3
Japan	23.0	26.2	25.9	26.2
Germany	16.5	17.6	15.7	15.1
France	15.3	16.9	16.2	15.9

Source: OECD

PRODUCTIVITY

	U.S.	Germany	UK	Japan
1974	100	100	100	100
1975	102	102	98	96
1976	106	110	103	105
1977	111	113	104	111
1978	112	116	105	120
1979	115	121	105	128
1980	118	121	104	132
1981	122	123	108	132
1982	128	124	114	132
1983	133	133	120	138
1984	136	139	124	149

Source: NIESR

WAGE COSTS (Manufacturing) PER UNIT OF OUTPUT

1980=100

	U.S.	Germany	UK	Japan
1977	83	90	63	100
1978	80	93	71	97
1979	94	94	82	96
1980	100	100	100	100
1981	106	103	110	106
1982	110	106	119	111
1983	107	104	119	111
1984	108	104	123	104

Source: NIESR

GENERAL GOVERNMENT DEFICITS (—) % GNP

	U.S.	Japan	UK	W. Ger.
77	−6.9	−3.8	−3.3	−2.4
78	—	−5.5	−4.2	−2.5
79	6.6	−4.8	−3.3	−2.8
80	−1.2	−4.5	−3.7	−3.1
81	−0.9	−3.6	−3.1	−3.9
82	−3.8	−3.4	−2.4	−3.4
83	−4.1	−3.3	−3.5	−2.7
84	−8.4	−2.4	−3.5	−2.3

Source: IMF

CONTRIBUTIONS TO GDP GROWTH

As a per cent of real GDP, seasonally adjusted annual rates

	1972 to 1973	1976 to 1979	1981 to 1984*
Private consumption	4.2	1.3	1.3
Government consumption	1.1	0.2	6.3
Gross fixed investment	1.7	0.2	1.2
of which			
Public	0.5	−0.5	0.2
Private residential	6	6	0.2
Private non-residential	1.1	0.7	0.8
Final domestic demand	7.0	1.7	2.7
Stockbuilding	2.9	0.7	6.4
Total domestic demand	9.9	2.4	3.1
Exports	2.2	1.2	0.9
Imports	2.9	1.1	1.9
Foreign balance	−0.6	6.1	−1.0
Compromise adjustment	−0.5	6.2	6.5
GDP at market prices	8.8	2.7	2.7
Output-based GDP	7.6	2.8	2.4

* Figures in 1984 are distorted by the miners' dispute.
Source: OECD

TRADE IN MANUFACTURES

£bn

	IMPORTS	EXPORTS
1976	18.3	20.7
77	20.6	25.8
78	24.3	28.0
79	29.7	30.9
80	31.2	34.8
81	31.9	34.6
82	37.1	37.3
83	44.9	40.1
84	62.9	46.7

Source: Dept. of Trade

INFLATION

% change annually

	U.S.	UK	France	W. Germany	Japan
1973	6.3	9.1	7.4	6.9	11.8
74	10.9	16.0	13.7	7.6	24.3
75	9.2	24.2	11.7	6.8	11.9
76	5.8	16.5	9.6	4.3	9.3
77	6.5	15.9	9.4	3.8	9.1
78	7.5	8.3	9.1	2.8	3.8
78	11.3	13.4	10.7	4.1	3.8
80	13.6	18.0	13.3	6.6	9.6
91	10.4	11.9	13.3	5.9	4.9
82	6.2	8.6	12.1	5.3	2.6
83	3.2	4.6	9.5	3.0	1.9
84	4.3	5.0	7.5	2.4	2.3
85†	3.8	5.6	6.0	2.3	2.3

† Estimate.
Source: IMF

Commentary by Our Economics Staff; data analysis by Financial Times Statistics Unit; charts and graphs by Financial Times Graphics Department.

AFTERMATH OF THE STRIKE

Maurice Samuelson continues his series with North Yorkshire

Hoping for a smooth handover

Mr Michael Eaton, still the NCB's North Yorkshire director and, in the background, part of the £1bn Selby project

BY THE end of the summer, the National Coal Board's North Ynrkshire area, which contains the £1bn Selby coalfield project, will no longer exist in its present form end Mr Michael Eaton, who emerged as the Board's natinnal spokesman at a critical stage in the miners' strike, will have ceased to be its director.

The area will have been extended to include the neighbouring Barnsley area, with a combined annual nutput nf 24m tonnes. This is almost a quarter of the national total and considerahly larger than the entire coal production of France.

Mr Eaton, who has already been nominated as the NCB's next personnel director and has recently acquired a London bome, will by then have taken up new national responsibilities, and the enlarged North Ynrks area will be headed by Mr Albert Tuke, the present Doncaster area chief. (Mr Tuke's present area will have been merged with South Yorkshire to leave only twn Yorkshire NCB areas).

Before his departure, however, Mr Eaton is having to wrestle with the unpleasant problems of closing some uneconomic capacity as well as capacity irreparably damaged during the strike.

Interviewed at the North Yorks area office et Allerton Bywater, Mr Eaton tries hard to give the impression that the closure process is being resolved in a controlled way without provoking too much bostility in local communities.

Thanks to the development of the Selby coalfield — comprising a drift mine and five satellite mines — he claims that the labour force bas a positive attitude to being redeployed from ageing pits to new capacity, even though the highly mechanised project can ebsorb only a fraction of men being replaced from older pits.

When be had arrived in the area as the Board's youngest area director, it had contained 22 collieries. But there will be only balf that number by the time he leaves and the output of the remainder will be twice as large as the nriginal output. "Between seven and eight of the closures took place when Arthur Scargill was still the NUM's Yorkshire president," he adds.

Over the past three years—during which time Selby has begun recruiting its underground workfnrce — about 1,500 men have been relocated in the area. Coal has become exhausted in the western part nf the coalfield and the industry has moved eastward to "one of the country'a biggest riches of coal nf which Selby is only the first bite."

The area is also planning an extension (into the Snaith coalfield) of Kellingley, the biggest pit in Britain. And north of York, the Board is measuring the North Ouse prospect which promises to be "another Selby" for the 21st century. By producing at £16 a tonne, the cost anticipated at Selby, its coal will be saleable anywhere in the world, Mr Eaton claims.

Apart from his sporadic sallies into the media to put the Board's view on national issues, and his preoccupation with teething troubles at Selby, Mr Eaton's most immediate concern is the fate of his existing pits.

The area this year had planned to close the loss making pits at Savile and Glasshoughton. But subsequently it also decided to close the Ackton Hall colliery which was seriously damaged by an underground fire during the strike.

According to Mr Eaton, the Board met union officials under "the normal review arrangements" and when it was taken to the local NUM branch the decision was accepted by three to one. The Board transferred half the 1,300 strong workforce within a month and all those who were not redeployed were either due for retirement or had taken voluntary redundancy. Ackton Hall is now due to close on July 8.

Although neither Mr Eaton nor the board's national headquarters will comment, it now seems that be will have to closure before the amalgamation with the Barnsley area.

The likeliest candidate is Fryston colliery, opened more than a century ago. Three years ago it was listed immediately after Ackton Hall in the area's league table of loss makers, with losses of more than £9 a tonne — and like Ackton Hall it was partly damaged in the strike.

Closure of the colliery, which is surrounded by the village of Fryston, would rednce the present North Yorks area's workforce to the future figure of 10,000 mentioned by Mr Eaton.

Mr Eaton, meanwhile, takes some comfort from the ease with which he says the area settled down after the strike. Although not as militant as the Doncaster and Barnsley areas, the North Yorks workforce is very loyal to the union. He describes the union leaders as "typical right-wing negotiatnrs who work hard for a deal but then work had to make it work."

By the time the strike ended, helf the workforce in the Selby complex and at Kellingley were back at work. Among the working miners, none is on extended sick leave because of intimidation threats, (as has happened, for example, in South Wales) but there has been "some movement between pits to take the steam out of local situations."

With the prospect of further investment in the area — Selby alreedy accounts for half the entire investment by the entire industry — Mr Eaton is hopeful that the changes will be made as smoothly as possible, and that he can hand over a peaceful regime to his successor. The next few days may show whether that is possible. But the simmering dispute with Nacods, the officials' union, shows that this will be far from easy.

CONTRACTS

ICI reverts to coal firing

BABCOCK POWER has won a £10.4m contract for boiler reversion at ICI petrochemicals and plastics division's Wilton (Middlesbrough) Wnrks. The order for design, supply and construction involves Nos 5 and 6 boilers which were originally supplied by Babcock in 1958 and 1959 as coal-firing units. These 80 MW boilers were converted tn oil and gas firing in 1970 and 1971. when coal was less competitive as a fuel feedstock. Following the successive surges in world oil prices, the ready availability and cost effectiveness of coal as a fuel, together with the grants available under the government's Coal Conversion Grant Scheme, ICI has decided to revert to coal firing as the prime fuel source. The boilers will retain their nil burning capability. The coal pulverising mills, burners end boiler pressure parts will be manufactured at Babcock Power's main works at Renfrew, Scotland.

*

C. H. PEARCE AND SONS (CONTRACTORS), has been awarded contracts of over £5.6m. For National Medical Enterprises, Pearce will design and manage a 53-bedroom independent hospital at The Glen, Durdham Down, Bristol. The £2.6m contract will take 65 weeks with the hospital admitting its first petients in the Autumn of 1986.

Building on the £2.65m contract for British Telecom at Sowton, near Exeter, began on May 1. The 13-acre site at Sowton will be the bome of e purpose-built district information systems unit and a materials management store which will deal with billing, fault repair, order bandling as well as stores, personnel and buildings records. Completion is due in February 1986.

At St Peter's Hospice, Bristol, for the National Society for Cancer Relief, the £370,000 contract incindes erection of a single-storey link between the Hospice and St Jnhn's Cottage together with demolition and alteration work, upgrading rooms in existing buildings, associated drainage, external works and services. Work is scheduled for completion in December.

*

Work has started on a £1.65m project in Bathgate which will use colliery waste to creale new land for private bousing development. The project—the result of co-operation between the Scottish Development Agency and Lothian Regional Council — involves drainage, landscaping and infilling the 116 acre Little Boghead site using 600,000 tons of colliery spoil from the derelict Easton Bing, whicb dominales Bathgate. In addition, 250,000 tons of clay will be used to provide a capping layer on the sile. Work will be completed by June 1986. Main contractor is **HEWDEN (CONTRACTS)**, Glasgow.

*

FRENCH KIER CONSTRUCTION has been awarded a contract worth £1.3m for construction of a car park services building at Dover's Eastern Docks. Work will last 40 weeks. The new building will provide a fast-food restaurant, shopping area and a bureau de change, and will be constructed close to the ferry berths at the Eastern Docks Terminal. A further contract worth £3m has been awarded by Dover Harbour Board to **W. A. DAWSON**, for construction of a retaining wall around a 12 acre land reclamation site at the Eastern Docks. The land is to be used for the standage of import freight vehicles and should be completed in about 18 months.

*

MFI Furniture Centres hes awarded **FAIRCLOUGH BUILDING** a £850,000-plus contract for a retail warehouse/showroom in Leicester. On a cleared site close to the city centre on Narborough Road South, the 5,400 sq metres unit will be built to e fast programme, with completinn scheduled for November.

*

TAYLOR WOODROW CONSTRUCTION (NORTHERN), Darlington, has won e £1.3m contract from the Department of Transport for road works on the A69 on Tyneside. Work entails building an interchange bridge over the A69 about one mile west of the Dunston Interchange end is scheduled for completion in March 1986. Included in the contract will be excavation and placement of 70,000 cu metres fill. The concrete bridge will have a centre span of 23.6 metres.

*

COSTAIN CONSTRUCTION, Coventry, has been awarded a £2.3m contract to refurbish British Home Slores in Wolverhampton. The contract calls for complete refurbishment of the lower ground and ground floor. Part of an existing stock room will be converted inin a restaurant on the first floor and an escalator will be installed between ground and first floor levels.

*

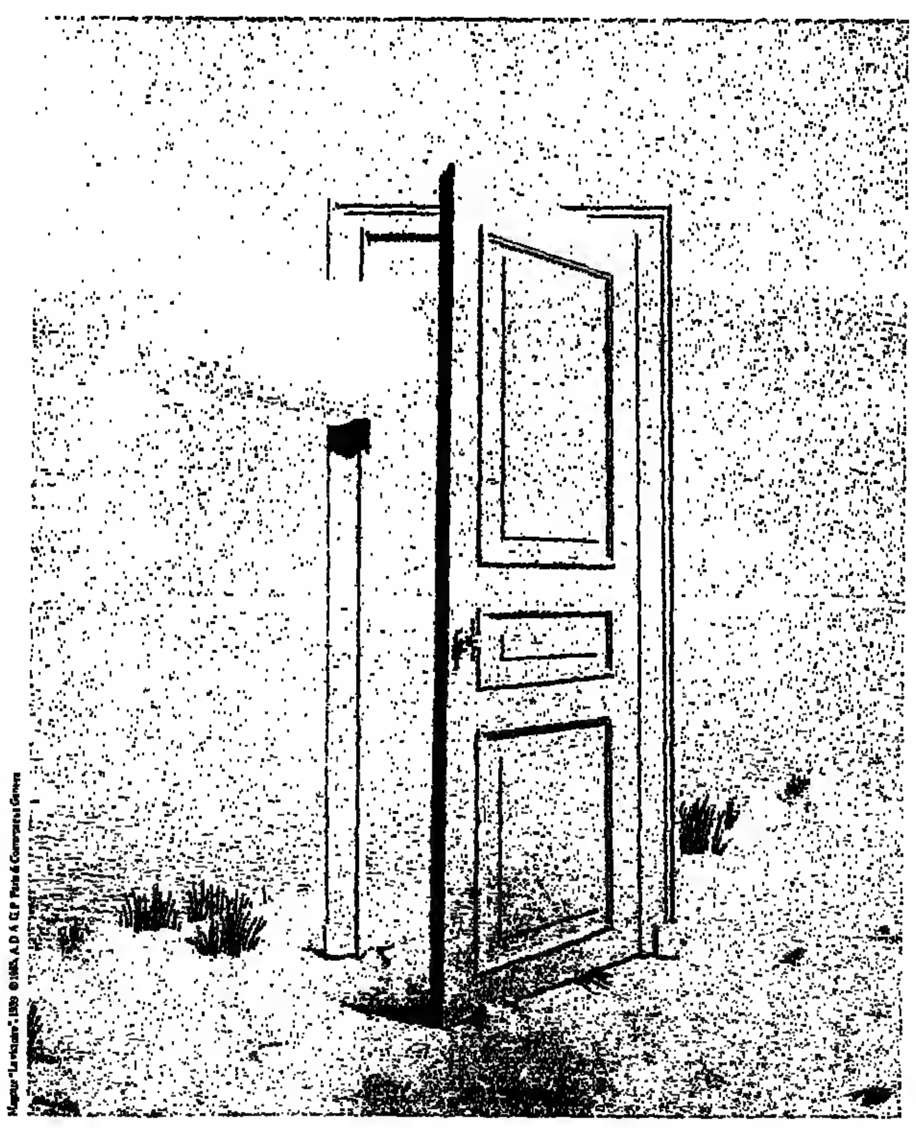
POWRMATIC, Ilminster-based manufacturer of warm air heaters, has obtained another order, worth around £200,000, to supply heating equipment to the Al-Rajhi-Al-Sedais poultry hreeding operation in Sandi Arabia through Sonth-Western Chicks. In this second phase Powrmatic has been asked to supply e further 160 of the horizontal monnting oil-fired air heaters in June and July. The units will be fitted with specialised motors, controls and oil burners to suit the local electricity supply and grade of fuel oil, and will be installed by South Western Chicks.

*

A £1.63m order has been won by **B.V. MACHINEFABRIEK SPAANS**, the Babcock International company based at Hoofddorn in the Netherlands. The contract covers the supply of the filling end discharging equipment for two coal silos. With a capacity of 50,000 cu metres each, these storage nlants will be built for the I/S Nordkraft power station at Aalborg in Denmark which is converting from oil to coal firing. The system shonld be in operation by April 1986.

*

The Leeds-based **LAW DATA SYSTEMS** has won a contract, worth over £200,000, to supply its Debtco system to TSB Trustcard. The system, using a Burroughs B1990 computer, will process outstanding Trustcard debts. Debtco pursues outstanding debts via the High and County Courts and uses an eutomatic diary facility to provide court documentation.



UK NEWS

Problems that finally grounded Lear Fan

Politicians and union leaders in the UK are asking what went wrong with the Ulster aircraft venture that promised so much for the Northern Ireland economy. Our Belfast Correspondent traces the background to the collapsed Lear Fan project.

THE RISKS inherent in aircraft development were barely mentioned in February 1980 when Mr Humphrey Atkins, then Northern Ireland Secretary, announced plans to build "the world's most advanced executive aircraft" at a factory near Belfast.

Two years previously the Labour Government, persuaded by worsening unemployment in west Belfast, provided over-generous finance for Mr John De Lorean's sports car project. By 1980, unemployment in formerly prosperous parts of Ulster brought pressure on the Northern Ireland Office to sign up for a further big venture.

There was no question of choice. The only project on the horizon involved a highly advanced aircraft made almost entirely of lightweight carbon fibre material. It was the venture of the late William Lear, one of the foremost aviation innovators in the U.S.

What is now clear is that the development of the aircraft was not, as the Government then claimed, well advanced. More than four years and £57m of public money later, the current owners have given up.

The combination of carbon fibres and a propulsion system using two turboprop engines coupled to a single rear propeller, promised to make the aircraft fly at speeds of up to 400 mph, using less fuel than some types of motor car.

The British Government's original deal was with the Learavia Corporation of Reno, Nevada, representing the executors of Mr Lear. The government committed about £20m in the hope that 1,250 jobs would appear by 1984. It was not long before the problems began to appear.

By December 1981 the company admitted it was over budget and behind schedule and within a few months the money was running out. At a Cabinet sub-committee meeting during the summer of 1982, Mr James Prior, the new Secretary of State, suggested that the best way forward might be to put the company into receivership in an attempt to reconstruct the business.

Two groups of investors showed an interest – the Beech Aircraft Corporation and a Saudi Arabian consortium led by a member of the Saudi royal family, Prince Sultan.

By September a deal was struck with the Saudis. This news came as a great relief to the 560 employees in Belfast who had already discovered that they had little work to do. The Government was providing a further $30m while the consortium would put up $60m. The Government also agreed to write off the £20m already given to the project and made a number of other concessions.

The consortium, investing through a corporation based in the Dutch Antilles, took 85 per cent of the equity and the Northern Ireland Department of Economic Development had 5 per cent, with minority interests holding the remaining shares. The employment target in Ulster was raised to 2,800.

The company's priority was to win an airworthiness certificate from the U.S. Federal Aviation Administration (FAA). To ensure that, Lear Fan delayed the start of production until mid-1983 and introduced short-time working.

The aircraft had started life with 270 orders but many of these had been taken early in the development at uneconomic prices. The new backers renegotiated many of the sales, and the order book was whittled down to about 100.

The certification programme then began to slip as structural failures occurred during the test programme. Cracks appeared in parts of the wing and a cabin door failed to withstand the specified pressure. The company said the problems were not uncommon in the development of an aircraft of this type. It took an optimistic view and by the end of 1983 it had purchased a substantial part of the vacant British Enkalon textile plant at Antrim.

The project slipped behind yet again, and a new problem arose in the form of competition. Beech developed a rival aircraft also incorporating expensive carbon fibre. After further technical hitches, in the summer of last year all but 30 of the 380 workers in Northern Ireland were paid off. While the Government sought assurances about the future of the venture, it withheld $10m which was due to the company.

With pessimism growing many of the workers went in search of new jobs. But by October the company announced it had won Type Inspection Authorisation from the FAA, a vital first step towards full certification. This was not expected until January 1986 – with customer deliveries beginning about the same time, but as the months went on, the fears mounted that the cost of development was overwhelming the business.

In a final attempt to reach production the Government spent months in tough negotiations with the private consortium emerging last December to announce that the Saudi-Arabian backers would make a further substantial sum of money available. The Government was paying no more. It came as no surprise that part of the deal was to scale down the employment target from 2,800 to a more realistic 1,100.

Yet the problems refused to go away. A difficulty with the aircraft's gearbox led to further delays and the company postponed any decision about re-opening the Ulster factories. At a board meeting in Los Angeles last Thursday the company decided to cease trading.

Now the trade unions in Northern Ireland are demanding a De Lorean-type investigation by the House of Commons Public Accounts Committee, which monitors spending of public money.

Other union leaders are seeking an explanation from the Government on why $10m, previously withheld, was paid to the company in January this year even though the Government was having an argument with Lear Fan about its contractual obligations to manufacture the aircraft in Northern Ireland.

The Government will spell out its position this week after the company has explained why it has called a halt to the project. Any government attempt to recover taxpayers' money may centre on the rights to the technology of the aircraft. The Government is believed to be in a position to sell the technology licence in the event of the company going into liquidation.

An emergency debate is expected in the Northern Ireland Assembly today when the Government will come under pressure to salvage the technology involved.

Renault offshoot delays new medium truck

BY KENNETH GOODING, MOTOR INDUSTRY CORRESPONDENT

RENAULT Truck Industries, the Dodge-Renault commercial vehicle venture, has delayed the introduction of new medium trucks it plans to build at its Dunstable plant, north of London.

RTI, which is 90 per cent owned by Renault Vehicules Industriels (RVI) of France, denies that the decision is connected with the group's large losses.

It says that three product programmes for the UK plant were running together – two for heavy vehicles and the medium truck project – and it would not be possible to launch three new product ranges at the same time.

"It was simply a question of project priorities, and a decision has been taken to allow the heavy truck projects to go first," RTI maintains.

The company insists that no final decision has been taken about the dates when the various vehicles will be introduced in Britain. Union sources suggest, however, that production of the medium range has been delayed from 1988-89 to 1991-92.

The state-owned French parent group recently reported a FFr 2.99bn (£247m) loss for 1984 compared with FFr 1.95bn the previous year. The UK subsidiary losses were about FFr 90m (£7.66m).

RVI has provided considerable sums for the British offshoot in recent years.

The latest accounts of RTI to be filed, for 1983, show the parent group made a £14m "contribution to working capital" that year, following a £6.4m contribution in 1982. RTI's pre-tax loss for 1983 was £12.44m compared with £20.8m the previous year.

Setback to pay hopes

BY JOHN HUNT

THE GOVERNMENT has run into great difficulty over its attempts to hold down public-sector pay to the "going rate" of between 4 and 5 per cent.

Reports to be published next week by independent pay review bodies are expected to recommend increases of between 7 and 8 per cent for the armed forces and for health service professionals such as doctors, dentists and nurses

This is more than double the official 3 per cent target laid down for the public sector this year.

The trouble has been caused by the higher than expected rate of inflation. Last month's figure increased to 6.9 per cent, with the possibility of a rise to 7 per cent before an expected drop later in the year.

The proposed increases will create particular difficulties for the Government in the teachers' dispute where it has been sticking to its 5 per cent offer in the face of industrial action.

If the awards suggested by the pay review bodies are met, the Government's hopes of holding public expenditure to a ceiling of £132bn this year would be jeopardised.

Ministry in bid for property agency

By Sue Cameron

WHITEHALL'S Property Services Agency (PSA) which administers government-owned property, is attempting to fight off a takeover bid by the Ministry of Defence.

The ministry already accounts for some two thirds of PSA's construction and maintenance business. But it is understood that the ministry now wants to dispense with the agency's services and organise major projects – such as the £276m Falklands airfield – itself.

If the PSA fails to stave off the attack, a ministry takeover could be a precursor to the privatisation of the agency.

Some ministers have long had the PSA on their list of candidates for privatisation. But one of the main arguments against such a move has always been that defence installations must be maintained by the public sector

Senior officials in PSA, therefore, fear that a defence ministry takeover of more than 60 per cent of their business could be the thin end of the privatisation wedge.

The ministry is apparently carrying out an internal exercise to find out whether its officials could do the work that at present goes out to the PSA.

Lucas denies dual standard for car parts

BY JOHN GRIFFITHS

LUCAS INDUSTRIES is seeking to defuse a row with Austin Rover, BL's volume car division, over Lucas components supplies to Nissan's UK car assembly project which goes onstream in August next year.

Mr Harold Musgrove, Austin Rover chairman, reportedly is angry over what he has interpreted as Lucas apparently applying a double standard between parts it supplies to Austin Rover and those it will supply to Nissan.

It was revealed last week that Lucas will provide alternators and probably a variety of other electrical equipment for the Stanza medium saloons Nissan is to assemble at an initial rate of 24,000 a year at its 800-acre Washington factory in north east England.

The choice of Lucas and several other UK suppliers for a variety of components follows the decision by Nissan to place sample orders in Britain.

Mr Ian Gibson, purchasing director of Nissan Motor Manufacturing, the UK production subsidiary of Japan's second largest car maker, said it had adopted the sample orders policy because "we are going to be making a new product in a new place; we have to be certain, through testing of durability and reliability."

What upset Mr Musgrove were observations from Lucas that the Japanese maker was looking for higher quality standards than those prevailing in most of the European industry and that it was "a challenge" for UK suppliers to meet them.

Austin Rover has interpreted this as meaning that higher quality parts may be supplied to Nissan than to Austin Rover which historically is one of Lucas' biggest and most valued customers with purchases each year worth £800m to £900m.

Lucas is adamant that Austin Rover's concern is unjustified. "We repudiate any suggestion that we are preparing to supply Nissan with parts of higher quality than those supplied to Austin Rover," a spokesman said.

What is seen in some quarters at Mr Musgrove's over-reaction to the Nissan affair reflects, however, an often expressed dissatisfaction with performance of the UK component industry in general.

MacGregor forced to abandon target for pit closures

BY MAURICE SAMUELSON AND BRIAN GROOM

A PLAN by Mr Ian MacGregor, National Coal Board (NCB) chairman, to close 20 pits in rapid succession after the end of the miners' strike has fizzled out because of the resistance shown by Nacods, the colliery supervisors' union, it was disclosed yesterday.

Instead, only five pits were closed without reference to the colliery review procedure which has become the main issue in the conflict with Nacods.

The failure to meet this proposed closure target – and the simmering troubles with Nacods – have shaken the prestige of Mr MacGregur and his deputy, Mr James Cowan, In the eyes both of the Government and of other NCB administrators. It has also led to the strong Government assurances that all closures will be submitted to recognised review procedures.

Another result of the post-strike dissent is that Mr Peter Walker, Energy Secretary, is most unlikely to extend Mr MacGregor's original three-year chairmanship by another year as was actively canvassed by some of Mr MacGregor's associates, when the year-long strike collapsed in March. The Government is also actively seeking a successor for the influential Mr Cowan, who is due to retire shortly.

Although the NCB has said that its immediate colliery closure plans will be submitted to local union officials by next Friday, this does not apply to capacity which will be phased out as it ceases to be productive or sufficiently productive.

Leaders of Nacods yesterday appealed to members not to strike after a tough response from the NCB to their ban on overtime, now in its second week.

The ban was imposed over the NCB decision to close pits before a modified colliery review procedure is set up.

The board is to halt bonus payments to supervisors who refuse to work overtime. Most safety work underground is carried out by Nacods members at weekends on an overtime basis.

Mr Ken Sampey, Nacods president, said: "I can understand the feelings of the members but I would strongly recommend them to stand by the ban and remain united."

Buoyant forecast for economy

BY PHILIP STEPHENS

THE CITY University today paints a buoyant picture of the outlook for the economy with growth predicted at 4 per cent this year, the highest since 1973, and the prospect of some decline in the unemployment total.

In its latest Economic Review, the University's Business School says that its "base" forecast also suggests that the economy will continue to expand over the next three years, although at a slower pace than in 1985.

Strong corporate profitability in response to falling oil prices, lower import costs because of an appreciation in the value of the pound and smaller increases in real wages should accelerate the trend towards rising employment, it says.

It predicts that the number of people in jobs will rise by 3.5 per cent this year and next, bringing a parallel fall in the unemployment total. As a percentage of the working population the jobless figure should be in single figures by the time of the next general election.

The inflation rate – as measured by the GDP deflator rather than the retail price index – is likely to remain broadly unchanged from the 4 per cent seen in 1984.

Debenham buyout plan 'last resort' in its bid defence

BY LIONEL BARBER

DEBENHAMS, the stores group fighting a £492m takeover bid from Burton and Habitat Mothercare, is working on plans for a management buyout defence which includes selling some of the group's prime assets.

The sale would probably include Debenham's consumer credit offshoot, Welbeck Finance, valued at between £150m and £200m; Harvey Nichols, the Knightsbridge store in the west end of London worth around £30m; the shoe manufacturing business Lotus and H&M Rayne; and several stores and associated properties.

The assets sale – designed to reduce the borrowing involved to a buyout worth up to £800m – would leave Mr Robert Thornton, Debenhams chairman, in charge of a much smaller group. Today Debenhams runs 67 stores – after a buyout the figure could come down to around 50.

Both Debenhams senior management and their financial advisers, Kleinwort Benson, have stressed last week that the buyout remains a last-resort defence, if only because it means revealing the value they put on the business. "I don't want to do the buyout," said Mr Thornton, last Friday. "I want to be left alone."

Debenhams will concentrate initially on a conventional defence against the Burton-Habitat bid. This will include what Mr Thornton describes as an impressive pre-tax profit forecast for 1985-86 when Burton produces its offer document, probably next week.

Last year, Debenhams made £41m pre-tax profits on £723m turnover. It claims that the current year has started well; brokers are forecasting between £52m and £60m pre-tax profits. Debenhams management is confident of hitting the upper end of the range.

The conventional defence is being conducted by Mr Thornton this time advised by merchant bankers N. M. Rothschild. It was pointed out yesterday that Rothschild, acting on behalf of Debenhams' shareholders, could refuse to endorse the management buyout terms if they were not deemed fair to shareholders.

Rothschilds, while fully backing Mr Thornton's endeavours to stave off the Burton attack, regards the buyout option as the final option. At this stage, a white knight, possibly from the U.S., is seen as an easier and more attractive defence. In this respect, the U.S. investment bankers Goldman Sachs, has been called upon for advice.

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Sale of Textron tool unit seems likely to slip by quietly

BY IAN RODGER

IT IS something of a commentary on the state of Britain's machine tool industry that the biggest company in the sector could be put up for sale and almost no-one would notice.

Indeed, few people realise that the UK industry leader is Bridgeport Textron, a company known best for the eponymous little turret milling machines that can be found in most of the world's metalworking tool rooms.

Bridgeport is part of Bridgeport Machines of the U.S. which, in turn, is a subsidiary of the giant Textron conglomerate ($3.2bn sales in 1984). Last December, Textron acquired Avco, another U.S. conglomerate, for $1.38bn, and since then it has been selling off subsidiaries at a fast pace to reduce its borrowings.

In February, it announced it was planning to sell Spencer Kellogg, a speciality chemical producer (turnover of more than $100m) and in March it put Bell Helicopter (turnover of $672m) up for sale. Early in May, Bridgeport Machines was put on the block, including its successful British subsidiary.

Despite its considerable size, very little is known about Bridgeport. Being part of a conglomerate, its figures tend to be mixed in with those of other operations, and Textron has avoided publishing much information about the company.

Bridgeport, which employs 2,500 people at factories in the U.S., Britain and Singapore, had total turnover of $180m in 1984 and was profitable. The division of which it is a part, which also has metrology and bearing businesses, made a profit of $11m compared with a loss of $16m in 1983. It is likely that Bridgeport itself was in loss for most of 1982 and 1983 because of the depressed state of machine tool markets, especially in the U.S.

Bridgeport's main product is the small turret milling machine, a versatile precision machine tool invented in 1938 and used mainly in tool rooms for shaping metal-cutting tools, forming dies and making prototype metal components. But Bridgeport machines appear in the workshops of all sorts of companies, from television studios to banks, wherever someone may have to work on a piece of metal in a hurry. The company has made more than 300,000 of them and claims a 55 per cent world market share for this type of product.

Like almost all U.S. and European machine tool builders, Bridgeport was caught napping when the Japanese began to sell sophisticated computer controlled machines in the late 1970s. But it has recovered well in the past three years, adding computer controls to its traditional machines, and developing new ones as well.

The British company has been responsible for much of the development, including the strategic move early in 1983 into small machining centres, the next logical step up from a Bridgeport for many users. The company started by making a few models in Leicester under licence from a Japanese builder and has gone on to develop many of its own models as well. These are now delivered to the U.S. as well as markets in Europe.

The British company is believed to have turnover of about £50m ($63m), placing it well ahead of other well known UK machine tool groups, such as TI Machine Tools, Colchester Lathe and the Kearney and Trecker Marwin subsidiary of Vickers. It has also been growing rapidly, more than doubling its sales in the past three years, investing about £4m in new plant and adding 200 people to its payroll.

Bridgeport now employs more than 800 people in factories at Leicester and at Bridlington in Yorkshire and exports half of its output.

It is difficult to guess what will become of Bridgeport. Typically, Textron is saying very little about the sale: it has not mentioned a target price or a time limit. Many companies would be attracted by the combination of a relatively low-cost UK manufacturing base and a very strong market presence in the U.S.

Whatever happens, it seems unlikely that Britain's largest machine tool builder will become British-owned.

OVERSEAS NEWS

Chris Sherwell, recently in Kuala Lumpur, examines moves to ease a growing burden of public sector debt

Malaysia steers clear of becoming 'next Mexico'

LESS THAN two years ago, some anxious spirits at the World Bank and the International Monetary Fund in Washington voiced concern that excessive foreign borrowing by the Malaysian Government might push domestic finances and the balance of payments out of control. There was even talk of Malaysia as the "next Mexico."

In Kuala Lumpur, a growing realisation that its international credit rating might be threatened led the Government to intensify the countermeasures it had already begun. It slashed spending, though mainly in development rather than recurrent outgoings, and took a grip on the previously uncontrolled spending and borrowing of numerous state agencies.

Latest figures on the economy, published last month by the central bank, show the success achieved thus far. The overall public sector deficit, embracing the federal government, 13 state governments and 27 so-called "off-budget agencies," narowed for the second year in a row in 1984. So did the current account deficit, which fell sharply from M$7.5bn (US$3bn) in 1983 to M$4.15bn —standing at 5.8 per cent of GNP—and was much better than forecast even as late as last October.

But the most interesting trends are on the external debt front. Malaysia's total foreign debt, at M$37bn, is now higher than ever before and will go still higher. Yet the country continues to secure the finest terms on the international capital markets and is managing to smooth out the debt repayment "hump" it faces for the rest of the decade.

Malaysia got into its jam two years ago because it tried to spend its way out of the world recession which followed the 1979 oil price jump. Being politically stable and resource-rich, it was attractive to bankers. But the recession went on too long, and by the time the policy reversal became necessary, borrowing trends were already ominous.

In 1981, for example, the federal government's foreign debt jumped 60 per cent, and the country's total external debt, including private sector obligations, had risen to M$15.4bn. Three years later, even with the policy changes, it had hit M$37bn, and it has yet to peak, probably at around M$40bn, officials say.

Given the sort of grace periods offered on repayments, it was inevitable that debt servicing would become increasingly burdensome in the mid-1980s. By last year it was already close to 2½ times the 1981 level at M$5.3bn, and thus a major contributor to the high invisibles deficit on the balance of payments.

Refinancing some of this has therefore become of paramount importance, especially with interest rates lower than in the early 1980s when some of the debt was first incurred. Two U.S.$60m floating rate note issues, arranged last October and in April, have already been made with the aim of smoothing out Malaysia's debt profile.

Ministry of Finance officials are reluctant to give anyone, even bankers, statistical details of the 1986-90 repayment profile which would show the magnitude of the problem and how far it has been neutralised. But they say they are not yet half-way through the refinancing process, and they estimate that it will take another couple of years to complete, provided the market remains attractive. Certainly, federal government debt service payments will be lower in 1985 and 1986 than last year, as will external borrowing.

The willingness of opportunity-short lenders to help a country like Malaysia, and the country's success in diversifying its borrowings, is shown by some of the loans arranged aince the beginning of 1984:

- Two U.S.$600m FRNs. The one offered last October was of 25 years' maturity and carried a one-eighth spread over London interbank offered rate (Libor). The April issue was even more remarkable—a 30-year "mismatched floater," allowing Malaysia to repay at below Libor.
- A U.S.$500m 10-year syndicated loan raised in May 1984. This consisted of a U.S.$300m tranche at a marginal ⅛ point above Limean, the mean of the London interbank bid and offer rates, for the first four years (and ⅛ point above Libor subsequently), and a U.S.$200m tranche at ⅛ point above Libor. This portion offered a tax advantage because of an Anglo-Malaysian taxation agreement, and its popularity caused the loan to be oversubscribed. Even now it has yet to be drawn down.
- Three Y30bn 10-year Samurai bonds issued in Tokyo, the latest of which was raised earlier this month, and a £75m bulldog bond with a lengthy 24-year life issued last month in London. Malaysia also issued a SwFr 80m bond in Switzerland a year ago and a Fl 100m Dutch bond a month later. Earlier, in March 1984, Malaysia tapped the Canadian market with a C$150m syndicated loan. All were on attractive terms.

On top of this, multilateral agencies like the World Bank and the Asian Development Bank— those which had previously voiced concern about Malaysia's economic management—are now said to be keen to lend more for development projects in Malaysia.

Malaysian officials add that the turnround in the figures has also won the applause of no less a body than the IMF. An IMF team on its regular annual visit recently is said to have voiced surprise at how much had been achieved in so short a time.

None of this means the Government's problems are over. the current account deficit remain priorities in economic management, and the debt servicing burden continues to be heavy—in 1984 repayments on federal government loans, government guaranteed loans and private sector debt amounted to 11.9 per cent of gros exports (7.9 per cent excluding the private sector).

Although this is smaller than in many developing countries, it will still encourage policy-makers in their fundamental aim of reducing the involvement of the public sector in the economy and promoting the private sector. The success of that will depend on other reforms now being planned—also, ironically, with the assistance of bodies like the IMF and the World Bank. The most important of these will be contained in the Industrial Master Plan, due to be unveiled shortly. and next year's Fifth Malaysia Plan, covering the period 1986-90.

MALAYSIA'S GENERAL DEBT (M$bn)

	1981	1982	1983	1984
Federal government	8.28	13.16	17.73	20.68
Guaranteed loans	3.07	3.71	5.49	7.14
Private sector	4.02	7.41	8.6	9.22
Total	15.37	24.28	31.82	37.05

Source: Central Bank

MALAYSIA'S DEBT SERVICING (M$bn)

	1981	1982	1983	1984
Repayment	1.08	1.51	1.53	2.43
Interest payment	1.20	1.59	2.14	2.87
Total servicing	2.28	3.1	3.67	6.3

Source: Central Bank

INSURANCE

Accounts treatment fuels financial reporting debate

BY ROGER WHEWELL

ONCE AGAIN, companies' financial reporting of their general insurance business is a matter of controversy. The accounting treatment adopted by some companies in last year's accounts has focused attention on a debate developing in the insurance industry and the accountancy profession. It centres on the relationship between "pure" underwriting profit and the return earned from investment of funds—an integral and important part of an insurance operation.

Investment income is regarded as an essential component of the profit for the period whereas, traditionally, gains on investments (whether realised or unrealised) have usually been excluded. Realised gains are in most cases taken to a reserve, although in some cases the reserve is "undisclosed" (usually deducted from an asset caption in the balance sheet without separate identification).

However, traditional practices are changing. In 1983, Commercial Union, which had previously taken realised gains direct to reserves, included them in the profit and loss account after taxation. Last year, Eagle Star changed its accounting policies to take credit in the profit and loss account for an element of unrealised investment appreciation based on an average of net appreciation arising in the five latest years.

Most of the big insurance companies now account for investments at market value but Eagle Star is alone among the big companies in taking unrealised investment appreciation to the profit and loss account.

In addition to different approaches to the inclusion in profit of the various elements of the investment return, there is the related question of recognition of the time value of money by discounting liabilities. This primarily concerns provisions for losses which have been incurred, but which are expected to be settled over an extended period.

In principle, the recognition of the time value of funds is held to meet the eventual payment accords with the fundamental accounting concept of "accruals," whereby revenue and costs are matched with one another so far as their relationship can be established. In view of the degree of uncertainty in predicting the incidence of future claims settlements and future investment returns, there is a general recognition that the rates at which claims liabilities are discounted should be conservative and have regard to the basis on which claims inflation has been treated for the purpose of setting the provision. Perhaps in some cases, discount is an implicit item within the claims estimates rather than in an explicit allowance.

At present, few insurance companies indicate that their liabilities have been discounted and fewer give any information by which the financial effect can be estimated. A significant exception is the Prudential, which disclosed in its last year's accounts the effect of discounting certain claims provisions and the rate of discount used.

A related matter is the use of "reinsurance" arrangements to mitigate outstanding claims by portfolio transfer on a discounted basis to reflect the likely settlement pattern. The premium paid to the reinsuring company may be substantially less than the estimated undiscounted cost of the liabilities ceded: if the difference is taken to profit in the same period, there has been, in effect, an accelerated recognition of a future investment return.

This diversity and confusion in the area of investment accounting and the related subject of the time value of money prompts a number of questions, such as:

- Why do insurance companies offer fundamentally different versions of profit for what are essentially similar activities?
- Would a common approach be beneficial and, if so, what should it be?

The roots of the first question lie in history. The insurance industry has traditionally given weight to the concept of prudence in financial reporting—an emphasis usually ascribed to the need to preserve stability in the face of external pressures and cyclical fluctuations. This approach was supported in statute, as a matter of public policy, in the disclosure exemptions permitted to insurers under the Companies Acts

In addition, the industry has not been subject to the same level of investment market demand for accurate reporting of profit which has led to the development of Generally Accepted Accounting Principles (GAAP) in the U.S. But the climate of opinion is changing. There is a recognition of tha need for the insurance industry to be seen to respond to the pressures for full disclosure.

At present, British insurers have travelled some way along this road. In many respects they are in advance of companies in many other countries. However, in the absence of a generally accepted body of accounting principles for insurance business, it is not surprising that some companies appear to be travelling faster than others, and by different routes.

Would a common approach be beneficial? As measurement on a common basis is at the core of financial reporting, this question answers itself as an axiomatic proposition.

This is not to suggest that there is no room for differences of accounting policy to reflect distinctions of operational methods and the particular circumstances affecting individual insurance companies, but the basic principles should surely be common ground. It is to be hoped that the insurance industry and the accountancy profession will be able to make progress on agreement to these basic principles

Roger Whewell is a partner in Peat, Marwick, Mitchell and Co. and chairman of the insurance industry committee of the Institute of Chartered Accountants in England and Wales. The views expressed are his own.

Sellers of assurance 'should be licensed'

By Eric Short

EVERYONE involved in sala and marketing of life assurance and pension contracts should be licensed, including those engaged only on a part-time basis, say tha two main lifa company associations, the Lifa Offices Association and the Associated Scottish Life Offices.

That is one of tha five principal areas of concern which the associations have identified in the Government's proposals for investor protection, and which are contained in a submission to the Marketing of Investment Board Organising Committee, the provisional boards set up under the chairman ship of Mr Mark Weinberg to regulate marketing of life assurance and unit trusts.

The Government's proposals envisaged that institutions offering investment business to the public should be licensed. But the associations submit that where life assurance is concerned it is essential that individuals should be licensed, to protect people.

The associations are also concerned over the disclosure of commissions and renumeration, a key feaure in tha proposals. They accept the general coocept, but the submission to the board points out that disclosure of commissions paid on lifa contracts would be ineffective in ensuring impartiality.

It also takes the view that disclosing commissions would mislead rather than protect

It fails to grasp the nettle of the position of the tied agent, an intermediary who places most of his business with one life company in return for financial considerations in addition to commission.

The proposal would not require tied agents to disclose commission in contrast to an independent intermediary who faces full disclosure. That aspect has split the life assurance industry between companies using tied agents and those using independent intermediaries.

One difficulty is that now tied agency is largely a self-classification, and some life companies assert that the first requirement is for a watertight definition of a tied agent.

THE WEEK IN THE COURTS

Need to hit profits of drugs crime

EVER SINCE summer 1980 when the Lords, reluctantly and to the surprise—if not dismay—of the public held that the criminal courts had no power to confiscate the proceeds of drug traffickers' crimes, there has been discussion on how to remedy that gaping hole in our criminal law.

Protracted talks in official and unofficial circles over the last five years have been given a further impetus by the Home Affairs Committee of the Commons in an interim report on Misuse of Hard Drugs. This impetus is, however, unhelpfully directed more towards harsher penalties than prevention.

The note of urgency that the report rightly strikes should not necessarily lead to the imposition of draconian measures. The committee proclaims, with a note of hysteria, that: "The penalty for systematic dealing in hard drugs should be no less than the penalty for premeditated murder." That is a mandatory life sentence which seems altogether too imprecise and extreme.

What constitutes "systematic dealing" and "premeditation" has never been a concept in the English law of murder or any other offence. There is, moreover, a bill in parliament which will increase the present maximum penalty for the unlawful production or supply of class A drugs, which include heroin, cocaine and LSD, from 14 years to life imprisonment.

If that is a sensible upgrading of the penalty—and there may be doubts about how much greater a deterrent the indeterminate sentence would be over a maximum of 14 years—parliament appears unwilling to introduce any harsher, fixed penalty. Again, the Home Affairs Committee seems to be wildly unrealistic in suggesting the mobilisation of the armed forces to aid the existing law enforcement agencies to stifle drug trafficking.

The ability of customs and police to prevent drugs entering the country through the authorised forms of entry and the unauthorised coastline is not adversely affected by the lack of personnel; rather it is the means by which the authorities can successfully detect the covert methods employed by aophisticated criminals for smuggling an easily concealed commodity.

The most encouraging proposals for reform that will have the greatest impact have come from an unofficial committee that reported a year ago. That committee, sponsored by the Howard League for Penal Reform chaired by Mr Justice Hodgson, atrongly recommended the adoption into our criminal procedure of a process that has been successfully developed in the civil courts over the last decade.

This is a process that is not restricted to the seizure and forfeiture of all assets acquired by drug traffickers but is appropriate to confiscate the profits of all crime. The process developed by the civil courts is to provide a fraud victim—or indeed anybody to whom another is financially indebted—with the right to go to the courts to freeze any assets of the fraudster (or debtor) in bank accounts within the jurisdiction of the court. This order is made on application to the court in private

After the order has been made the defendant is entitled to challenge it or at least claim a release of such funds for the purpose of meeting living expenses. When the case comes to trial and the defendant is convicted a fund is available to which any court order can readily attach.

Recently there have been attempts by prosecuting authorities to adapt that process to the case of defendants in prospective criminal proceedings, but with only very limited success. The law needs to be changed to provide that the independent national prosecuting service—that will shortly be brought into existence under the Prosecution of Offenders Bill—should be empowered to seek from the courts an order freezing the accused'a assets.

To make such an order effective the access to the courts will need to be available before any arrest is made so that the potential accused has no inkling of his or her impending prosecution and cannot take the opportunity of salting away criminal proceeds. Too often in the past criminals have been able to put their ill-gotten gains safely out of arm's reach before they have been convicted. At that stage and only then had the prosecution been able to obtain financial penalties and compensation or restitution orders against the convicted.

Far from needing to step up the amount of punishment in the form of increased penalties and imprisonment, the law needs to ensure that more offenders are stripped of the profits of crime. Then, reports wil refer less to the use of the scarce resource of prison. Locking up those who engage in profitable white collar crime is unlikely to reduce its incidence. To strip them of crime's profits can be socially satisfying and prevent imitative behaviour.

Mr Leon Brittan, the Home Secretary, has publicly stated on several occasions that the preventive function of the criminal courts is one that he is intensely interested in promoting. A Criminal Justice Bill in Parliament's next session will reveal details of his plan. Whether it also will contain additional punitive elements remains to be seen. Clearly, in the drug trafficking area he will have powerful supporters for more condign punishment.

JUSTINIAN

TECHNOLOGY

EDITED BY ALAN CANE

Of men and mighty mice

Stephanie Yanchinski on the latest in genetic engineering

GIANT MICE have been bred with human genes, and giant pigs may not be far behind. At the end of next month the American Federal Court will hear an unique court case which might prevent these things happening.

Meanwhile, Dr Ralph Brinster, of the School of Veterinary Medicine of the University of Pennsylvania, who was the first to create mighty mice by genetic engineering with human genes, is applying the same technique to pigs and sheep which he hopes will grow, if not twice as big, at least twice as fast.

Already Brinster's experiments have incurred the wrath of pressure groups led by activist Jeremy Rifkin, head of the Foundation on Economic Trends. He vociferously argues that such experiments are not only ethically questionable, but could have unforseen agricultural consequences.

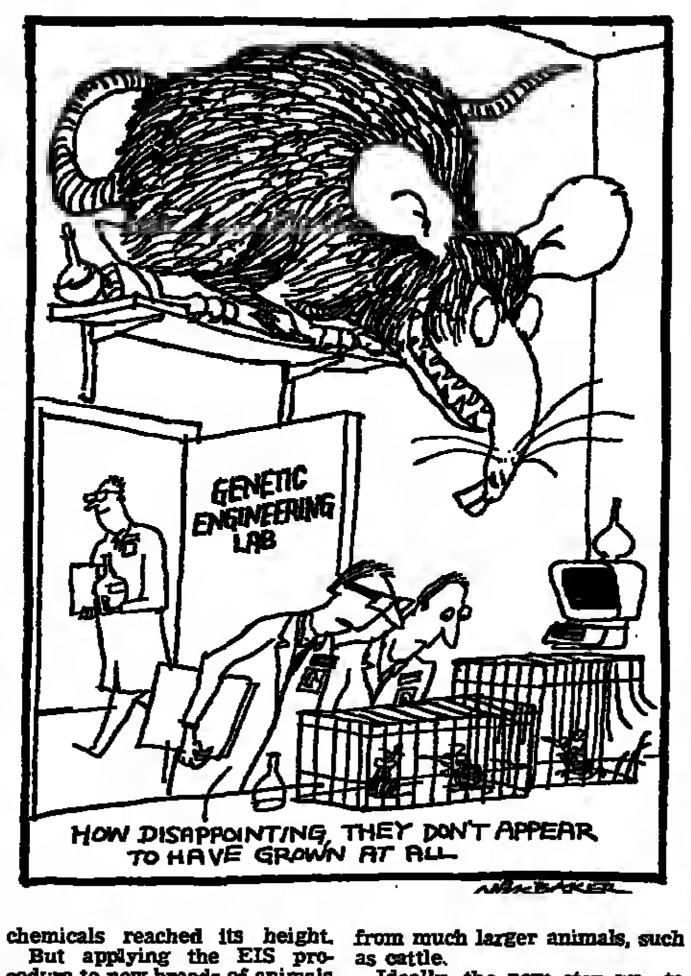
The new suit is a test case involving the fundamental question of whether it is permissible for scientists to use genetic technology to cross boundaries between species, since in nature unrelated animals generally cannot mate and produce offspring with mixed genes.

"We are challenging the transfer of genes from one animal species to another," Rifkin says. "Each species has its own identity. It is ethically and environmentally inappropriate to eliminate the barrier between species."

Last November, the Foundation on Economic Trends, together with the Humane Society of the U.S., and the Minor Breeds Conservancy of America, a group of farmers who protect rare breeds, filed a lawsuit in the District Court of Washington DC against the U.S. Department of Agriculture, which supports Brinster's work.

They sought an injunction to stop the experiments altogether until a lengthy piece of protocol, called an Environmental Impact Statement could be completed. This is required under the National Environmental Protection Act when anything is released into the atmosphere which might endanger the environment.

The EIS originated in the early 1970s, when concern about the hazards or indiscriminate spraying of agricultural chemicals reached its height.



HOW DISAPPOINTING, THEY DON'T APPEAR TO HAVE GROWN AT ALL

But applying the EIS procedure to new breeds of animals would set a precedent, which the agriculture department is anxious to avoid. Such a statement could take years to prepare and yet be totally meaningless.

Three years ago the cover of the British science magazine Nature was adorned by the world's first giant mouse. Richard Palmiter at the Howard Hughes Medical Institute of the University of Washington, together with Brinster and Ronald Evans of the Salk Institute, had succeeded in inserting rat genes, coding for growth hormone, a substance which controls the size of animals, into mouse embryos.

After birth, the six of the seven mice carrying the rat gene, and producing rat hormone, grew to twice their normal size at twice the rate. The astounding success of the experiment encouraged visions of breeding sheep the size of pigs and pigs the size of cows using growth hormone genes from much larger animals, such as cattle.

Ideally, the next step was to insert the gene coding for bovine growth hormone into mice, and eventually into pig or sheep embryos. But the gene for bovine growth hormone was not available, so Brinster, instead, took the gene coding for human growth hormone which scientists had isolated years before.

The next series of experiments, reported in the American magazine Science one year later, involved inserting the human growth hormone gene into mice. They started by constructing a hybrid gene. They attached part of a mouse gene coding for an enzyme metallothionein, to the human gene coding for growth hormone. Metallothionein is an enzyme essential for growth, which is activated in the presence of certain metals, such as cadmium or zinc. Finally, with a microsyringe and under a microscope Brinster injected the fused genes into the tiny, newly fertilised mouse embryos and implanted them into their mothers.

After they were weaned, the 23 mice which survived were fed zinc in their diet. This turned on the metallothionein gene and boosted growth even further. Of these survivors, 70 per cent carried the human gene, and grew significantly larger than normallyi nice.

Since then Brinster, with the blessing of the U.S. Department of Agriculture, has gone on to insert human growth hormone genes into sheep and pigs but with limited success.

The experiments with pigs were not much better. Two-and-a-half-thousand were injected with human growth hormona gene and of the surviving 247, only 18 had incorporated the human growth hormone gene, and five of these have since died.

More importantly, although tests confirm the presence of human genes amongst the animals' own genes, the survivors are growing only at a normal rate.

Dr Azim Surmai, a researcher working on similar experiments at Britain's Institute of Animal Physiology, near Cambridge, says: "We have no clear idea how to direct a gene to a specific site within the animal's genetic material, and so ensure it functions properly." He is adopting a different approach from Binster and constructing genetic fusions which can go inside the animal's genes anywhere, and still work.

In spite of these setbacks, the U.S. Department of Agriculture still believes the work worth pursuing, and denies that Rifkin has a case. The Agriculture Department defnds its decision to support the research because it believes it could produce more food, faster, or produce disease-resistant animals.

Dr Harold Hawk, chief of the Agriculture Department's animal reproduction laboratory, in Beltsville, Maryland, says: "My feeling is that if we could modify a species that will produce meat cheaper or faster for the benefit of people, I see no reason not to do it." Meanwhile, the Agriculture Department has filed to have the Rifkin case thrown ont of court.

Rifkin sees such experiments as reducing life to the chemicals in deoxyribonucleic acid, DNA, the substance making up genes. "Instead of seeing an organism as a discrete unit, they are reducing it to the information in the genes. They are redefining life," he says.

Next Friday: Gene probes

South Korea prepares to fire first shot in video war

IF LIFE was not full of nasty little surprises, 1985 should be the year in which two ailing sectors of the audio-visual industry ail a little less. The struggling cable TV business is now seeing its new multi-service channels coming on stream; and in case nobody noticed, this is also British Film Year—when, it is hoped, the cinema will be rediscovered by a capricious public.

Unfortunately, however, it all demands more viewing time. If there was ever any hope that more disposable income might become available for cable and the cinema now that video and broadcast TV have flattened out, tha manufacturers have other ideas.

The competition for British consumer viewing is well exemplified at the annual trade shows for dealers in the electronics business. Held in London again last week, the trade shows find various manufacturers dispersed around a number of hotels, each with their own privately hosted exhibition: which can make it hard on the feet, liver and digestion, but at least useful in gathering a perspective of what tha industry believes the consumer will buy this autumn.

The apparent hopes of the industry are focused on the compact audio disc, new and better VCRs with hi-fi sound, camera cassette recorders such as JVC's Video Movie and Sony's 8mm system, and television sets with flatter, squarer screens and pseudo stereo sound.

Dealers cannot escape from the importance of video in particular, which although past its boom years is now becoming a useful replacement market—helped by the defection of consumers from the TV rental industry, which once accounted for 70 per cent of all VCRs in Britain but now hovers nearer 30 per cent.

The newer VCRs are sleeker and smaller, but otherwise are not greatly changed. Apart from hi-fi sound, the only revolution for VCRs this autumn could be a price war. The opening shot will be fired in August when Samsung becomes the first South Korean manufacturer to sell VCRs in Britain—at £369 for a sleek VHS machine, £60 less than the cheapest Philips VHS.

Much in evidence, too, will be the battle for the home video movie-making market. As already well-documented in this column, the main contestants are Sony—with their 8mm camera cassette recorder—and the rival VHS system which remains compatible with most home VCRs.

There are two versions of the VHS CCR available, under a line-up of brand names. Apart from the compact C-type which uses a cassette adaptor to replay its small cassettes in a VCR, some companies are now introducing the Matsushita/Panasonic version—larger, but taking a normal size VHS cassette with up to four hours recording time. Last week Hitachi and Philips were showing their branded versions of this, the latter listed at £1,100—the same price as Sony's smaller 8mm CCR which only records two hours.

The next season will thus witness a multi-manufacturer battle to make the consumer spend more time and money on video movie-making. The longer running time of the larger versions from Panasonic and others may be more attractive to the semi-professional user (the first order for Philips has come from the British Amateur Athletics Board, which will use eight for coaching purposes). The smaller C-type favoured by JVC, ITT and others may have greater consumer appeal because of its compactness.

Video & Film

BY JOHN CHITTOCK

There is more to come in the competition for a share of the consumer cake—some of it arguably better or more interesting than cable TV, DBS or the local cinema. One development talked about at the trade shows, and a reality in Japan, is tha combined CD audio/video disc player. This may seem an extraordinary indulgence, but it is the epitoma of better picture and sound quality. It would be as foolhardy to dismiss this now as it was to write off hi-fi audio as a mass consumer product in the 1960s.

Manufacturers are still battling to make video projection better, if not cheaper. Sanyo last week displayed a back-projection unit, which yielded very acceptable pictures on a screen of 117 cm diagonal—large enough for any home and ideal for pubs and clubs; while Hitachi displayed a front-projection model with a picture bright, sharp and large enough for small auditoria—maybe an answer for those who see video projection as a possible replacement for film.

None the less, video projection is still awaiting a technical breakthrough. Apart from the Rolls-Royce of all systems—the Swiss-made Eldophor (and you can buy a few Rolls-Royces for the price of it—others rely on very bright picture tubes pumping as much light as possible through large aperture optical systems. A British company, Dwight Cavendish, has a laser scanning system; but most development has concentrated on squeezing more out of existing technologies.

Which is why, perhaps, the real pot of gold in consumer viewing—3D—is still as elusive as perpetual motion. Over decades many have tried to introduce practicabla and effective stereoscopic systems but, holography apart, none has really succeeded. Holography yields almost the ultimate in realism, but it is virtually unworkabla with moving pictures (although the Russians have tried).

Nearly all practical developments in 3D movies have been based on tha use of separate left and right eye images—which must be viewed using either red and green or polarising filters to prevent left eye images being seen by the right eye and vice versa. Lenticular screens have also been tried as a viewing method, relying on the parallax difference between the left and right eye to reveal only the appropriate images which are interlaced behind each lenticular strip.

In 1985 such methods seem as crude as windscreen wipers on Concorde. The stereo effect generally lacks roundness, and viewing either requires special glasses or critical positioning. For television 3D, there are bigger problems—the red and green viewing spectacles inhibit full colour reproduction; and polarising filters can be only used with a video projection system.

For someone, somewhere, stereoscopic television offers scope for an exercise in lateral thinking—abandoning all of the old methods. For consumers, dealers and manufacturers alike, it could be the product of the century, ready to take over when every home has its own high definition, hi-fi, TV/audio system based on optical disc, DBS or just solid state programming.

Cheap car exhaust that lasts

CONVENTIONAL motor car exhaust systems provide the worst of al possible worlds. They are expensive—typically £14 for a BL Mini and £110 for a Volvo 240 series—and they last a very short time.

The traditional mild steel variety are guaranteed for only one year and after being buffeted by hot gases at temperatures ranging from 400-800° C and corroded by salt and water on winter roads, many do not last that long.

There are answers, of course, the most expensive being a system fabricated 100 per cent in heavy gauge stainless steel.

Aluminised systems—mild steel with a thin protective coating of aluminium—are an improvement but not perfection.

Burgess Products of Hinkley, Leicestershire, in the UK has an answer which it claims gives all the benefits of the stainless steel solution but at substantially less cost.

Its idea was to create a hybrid exhaust system. Corrosion in the piping emerging directly from the engine exhaust port was known to be slight so that was fabricated in mild steel. Joints, potential danger sites, were replaced by stainless steel ball joints.

The intermediate pipes are in heavy guage aluminised steel tubing but the middle boxes have flanges and performations fabricated in Hyform 409 stainless steel.

Tha whole of the rear box is fabricated in stainless steel.

The price of such a Burgess exhaust for a Mini is £29 and for a Volvo £145, but the company guarantees the exhaust for the lifetime of the ownership of the car—in other words the Mini owner pays typically over three years, £9.67 a year compared with £14 a year using a conventional exhaust.

More on 0455 637701.

THE MANAGEMENT PAGE: Small business

EDITED BY CHRISTOPHER LORENZ

Venture capital

No lack of money—just of managers

RONALD COHEN, elevated last week to the chairmanship of the British Venture Capital Association, promised to bring a distinctly crusading tone to Britain's leading venture capital lobbying group.

Thirty-nine-year-old Cohen, chairman of the venture capital firm Alan Patricof Associates, is well used to stirring-up public opinion from his former incarnations as President of the Oxford Union and Liberal candidate for North Kensington in the 1974 General Election. Still a member of the Liberal Party, though an inactive one, he jokes that it is like the venture capital industry in that "they are both small, trying to get large."

As chairman of the BVCA, which recently improved its own size substantially by welcoming to its stable 3i, the largest venture capital investor in the UK, Cohen will be riding one particular hobby horse in the year ahead.

"The big showstopper today (venture capitalists' jargon for a bitch in investment plans) is whether or not we can attract more professional executives oot of large firms to go into young ventures," says Cohen. The industry is not short of funds or propositions to back. The BVCA estimates that its members will invest more than £200m this year as against £190m—about two-thirds of all UK Venture capital—in 1984. Bnt the companies it is being asked to invest in are frequently short of experienced management, he argues.

This Cohen attribntes to a lack of education among UK executives about the availability of venture capital, a failing which the BVCA aims to do mnch to correct. Echoing a widespread complaint among British venture capitalists, Coben bemoans the fact that managers in the UK appear to be far less ready to take the risk of setting up on their own than their U.S. counterparts.

That caution, believes Cohen, is closely linked to the fact that the UK tax system makes it more difficult for managers to build up spare cash to help them establish independent businesses than is the case in the U.S. He estimates that a 40-year-old British executive in a senior post can expect to have saved £50,000, excluding his pension scheme, while his U.S. equivalent is likely to possess $250,000 (£200,000), even if his pension may be smaller.

Suggestions he will be putting forward to the Government to correct this inequality will include permitting managers - turned - entrepreneurs to take out interest-free loans using their pensions as collateral, and exemption from Capital Gains Tax when they cash in on the rewards of their risk-taking.

Cohen's own background makes him well acquainted with the trials and tribulations experienced by the people he invests in. He was born in Egypt, where his father set up a general trading business before emigrating to the UK after the 1956 Suez crisis. Cohen set up an investment banking services group, Multinational Management Group (MMG) at the age of 26 with three friends from Harvard Business School and £30,000 backing from the Institut de Developpement Industriel, the French State-owned equity bank for which he used to work.

MMG, of which Cohen is managing director, specialises in arranging international mergers and share placings. Last year, it advised Continental-Pharma, a Belgian pharmaceuticals group, in its $50m-plus takeover by Monsanto.

Coben met Alan Patricof, head of one of the top 10 U.S. venture capital firms, in 1975. They, Patricof's partner, and Maurice Tchenio, one of Cohen's original partners in MMG, agreed to set up Alan Patricof sister companies in the UK and France, in which each of the four partners has a minority shareholding.

Running an investment bank and a venture capital group leaves Coben, who usually works a 12-hour day, little time for relaxation. However, he does confess to taking the occasional constitutional weekend walking in the Home Counties with his wife, who knows a thing or two about entrepreneurship herself as new business development manager for the screen entertainments division of Thorn EMI.

WD

Peter Button (left) and Colin Power: instituted three-year contracts in return for exact breakdowns of unit costs

Capitalising on an economic shake-out

William Dawkins explains how a printer formulated its approach to sub-contracting

IF IT were not for the last recesion, it is very likely that Peter Button would at this moment be trying to sell telephone directories in West Africa.

Instead, be is the proprietor of a fast growing printer of product documentation, which has just raised £300,000 from 3i, the financing institution, after seeing its sales more than triple to £2.3m in the year to last December.

Button's company, High Speed Printing, illustrates tho risks involved in ellowing a growing business to be too dependent on the skills of one man and the importance of being able to delegate responsibility while keeping a close eye on middle management.

This East London-based venture also shows bow correct pricing can make all the difference between success and failure in a fiercely competitive industry like printing, where HSP needs to juggle its finances so that it can reinvest at least 10 per cent of its turnover just to keep abreast of the market.

HSP is among hordes of small sub-contractors in service industries as widespread as transport and catering—but especially printing—which have benefited from the pressures which falling sales and margins have exerted on large companies to take n critical look at running costs.

With the high fixed overheads and fluctuating workloads associated with In-bouse printing this activity has become an easy target for farming out by big companies to sub-contractors able to offer a cheaper service by virtue of the economies of scale available to them.

As a result, HSP finds itself in one of the fastest expanding areas of the printing business, product documentation, a £150m market estimated to he growing at 15 per cent annually.

Some 90 per cent of HSP's sales were contracted last year from large industrial corporations like IBM, Esso, British Gas and Unilever. Every mechanical product they make, whether a piece of equipment for an oil rig or a cash register, needs training and maintenance literature to support it.

As technology improves and products are redesigned, those documents need to be updated with an equal speed and freqnency. That makes Button's market a precarious one. He needs to invest on average £250,000 annually in printing plant, plate making machinery and computer ordering and stock control systems just to stay efficient enough to satisfy his large customers.

At the same time, Button needs to maintain between 10 per cent and 15 per cent surplus printing capacity to ect as a back-up and cope with unpredictably large orders. Print runs, mostly in black and white, can vary from five copies of a training manual to 18m impressions of an official form for Her Majesty's Stationery Office.

Bot the rewards for a skilled operation can be substantial. HSP came oot with a £120,000 profit last year and is expecting to make £430,000 in the current 12 months.

HSP's origins were equally precarious. Button and his production director, Colin Power, started out in 1973 after a furious row with their former employer, a high street printer. Their backing was a £15,000 equity injection from Bear Investments, a company owned by Button's brother and the colourful financier, Lord Hesketh. Those shares were bought back wben Bear went into receivership a few years later.

Their first contract was to take surplus work from British Gas's in-bouse printing plant in the City, and Button's contracts in the industry soon brought in more contracts of the same nature. Two years later, he embarked on an eccentric and ultimately ill-fated venture printing telephone directories and official documents for the West African state of Liberia. Button mistakenly believed Liberia's 137-year history of political stability was set to continue and was attracted by the lack of local competition for printing contracts available from a number of large Western companies working in the country, including Chase Manhattan bank, Rank Xerox and Firestone.

HSP Liberia was nationalised in 1980 after former Master Sergeant Samuel Doe took control of the country. Button and Power found to their horror that during their frequent trips to Monrovia, his UK management team had been devoting more than three-quarters of their time to setting up their own printing company, giving little attention to HSP's affairs. They departed, leaving behind them a £137,000 loss in the year to December 1979.

It took two years for Button and Power to bring HSP back into the black, during which time they hired new management, painstakingly negotiated extended credit from their suppliers, and attempted to win back customers by offering them one-year fixed price contracts.

No sooner had the damage been repaired than disaster struck again. Button, who was in sole charge of marketing, was injured in e fireworks accident at home and had to take 3½ months off work—an experience which taught him a salutary lesson about the practical difficulties of insuring against that kind of risk by delegating responsibility.

"We immediately realised how vulnerable we were," he recalls. While on his sick-bed, Button dreamed up a solution which was eventually to transform the way in which HSP operates. Instead of giving a single quote for jobs in the old way, HSP would strika three-year contracts in return for which it would provide customers with an exact breakdown of unit costs down to each individual page.

By comparing these with their own in-house printing charges, customers could see more clearly the cost savings HSP could achieve—at least 30 per cent, claims Button—by virtue of its high volumes and relatively stable workflow. HSP prints between 11m and 15m impressions in an average

It allowed HSP to make its workload more predictable, end this in turn helped it to keep stock levels to a minimum. Today, Button estimates that his factory's entire stock is turned over once every four weeks.

The 3i cash comes in at what could be an important turning point in HSP's fortunes. Now that it has found some stability—barring any further ill-considered ventures like the Liberian one—HSP can afford to look for greater economies of scale by seeking acquisitions among the 5,000 or so small printing companies estimated to be at work in the London area. Meanwhile, Button is working on setting up a direct computer link with some of his bigger customers so that orders and stocks can be turned round even more quickly.

The allowances that may be set against tax

THE trading results of your business are not necessarily an accurate guide to how much tax you have to pay.

The gap between your accounting and tax position was narrowed, but by no means eliminated, by the changes introdnced in the 1984 Budget, such as the abolition of tax relief from the effects of inflation on the value of trading stock and the reduction of tax allowances for the cost of buying fixed assets.

Your business accounts nevertheless form the starting point in calculating taxable income. Taxable profits must be adjusted in two ways. They should be reduced by the amount of any income inclnded in the profit and loss account which is not strictly earned from your business activity. Such income—like interest earned on the deposit of surplus funds, for instance—will be taxed under different rules.

Your taxabla profits must also include certain figures which you would normally deduct from your trading results, but which are not allowed to be deducted for tax purposes. These non-deductible charges include depreciation and entertainment spending, though you are allowed to deduct the latter if it is for entertaining staff, overseas trade customers or foreign government agents.

Depreciation is charged on fixed assets like yonr factory, delivery van or process plant. Although asset depreciation is non-deductible, you can claim tax allowances for the cost of buying certain kinds of assets like plant and machinery, industrial buildings, know-how and research spending.

Until 1984 the allowances were generous. The whole cost of machinery and plant and up to 79 per cent of the cost of an industrial building conld be deducted immediately. By April 1 1986 the immediate deduction will have fallen to 25 per cent and 4 per cent respectively.

If you carry on business on your own account, your business incoma remains taxabla at the personal tax rates of up to 60 per cent, despite this reduction in tax allowances.

However, the rate of corporation tax paid by a company has been reduced from 38 per cent to 30 per cent if it has profits of £100,000 or less. For companies with profits of £500,000 or over the tax rate will have come down between 1983 and 1986 from 52 per cent to 35 per cent. Between tho £100,000 and £500,000 profit bands, tax is charged at a marginal rate which is being reduced over the 1983-86 period from 55 per cent to 36.25 per cent.

As your business'a nominal tax rate gets higher, so does the share of the cost borne by the Government when you purchase a tax-allowable asset.

If yon can bring a capital expenditure programme forward before April 1 1986, you may get higher tax allowances. Moreover, those allowances will be worth more to a company subject to higher tax rates.

On the other hand, if you can legitmately defer income until after March 31 1986, it may be taxed at a lower rate.

Expenditure on repairing an asset, as opposed to buying a new one or improving an existing asset, can still be dednected in full for tax purposes. It is therefore important that your records are detailed enough to identify this type of spending.

If your business bas run at a loss, or if the adjustments that must be made for tax purposes produce a loss, you can set the deficit against other income (and, in the case of a company, against its capital gaios) for the current and certain other tax periods.

Generally, the earlier you can use the loss the better. If you are entitled to carry it back to earlier periods, you may receive a tax repayment plus tax free interest on it. If, however, you cannot use the loss immediately, you can only carry it forward and set it against future income from the same business activity.

Malcolm Gammie is Director of National Tax Services at KMG Thomson McLintock....

Malcolm Gammie

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Art/William Packer

The haunting vision of Francis Bacon

Tn the wider British public Francis Bacon is an artist more controversial in his reputation than popular, but those with a closer interest in hs work and knowledge of hs achiavement over some fifty years ade not surprised that at the age of 76 he should be allowed the rare honour of a second major retrospective exhibition at theTate (until August 18; then on to *Stuttgart and Berlin*).

Since that first show in 1962, which even then confirmed his stature as one of the most significant nf modarn painters, ba has continued if anything more prolific, his work larger in scale an dextended *further by* the almost habitual use of the diptych *or triptych* arrangement; and now a definitive mass of it has been assembled for tha first time.

It makes for an extraordinary, astonishing and at time exhilarating experience, and our thanks must go not just to the Tate but to the sponsors, Global *Asset Management, for* bringing it about, and to Thames and Hudson too, for their collaboration with tha fine catalogue.

Wa have lt on the personal authority of our Minister for tha Arts, no less, delivered in the public prints and on television in recent weeks, that in Francis Bacon we have the *greatest painter* alive today. A large claim indeed, but it is one widely shared, most especially ahroad, and there is nothing at all incongruous in the Tate's Director, in his short catalogue introduction, citing Rembrandt and Van Gogh among Bacon's true peers. But Mr Bernard *Levin, who was* the *Minister's* interlocutor on one television occasion, could *only* respond to this considered and serious judgment with dismissive scorn. The exchange was most revealing, for here we saw clearly yet again the great divide in our native cultural life between those who *have* eyes to see *and* those who have not.

The problem with whicb Francis Bacon faces us in his art is the problem of imagery so strong in lts superficial presence and immediate impact that even those who are now familiar with it, and have come to accept it, have needed time and application to see beyond lt and so move deeper into the work. Those blessed with less visual, more literary habits of interpretation and more literal a cast of mind can think of nothing. as they can see nothing, more than the apparent violence done the buman figure, the gratuitous, arbitrary distortion, an easy, pltiless contempt for the human condition. What seems to be the message is to them everything.

If there were nothing more to it than that, how could we not agree with them in rejecting what merely disgusts us, and distrusting what we cannot see. But of course there is more to it, much more: a mere talent for grotesque invention never made a painter great, and as with all forms of art lt is what the artist does with his image and his imaginative material in formal terms, how he makes it, puts lt together and disposes it, that is the real test.

The qnestion is never one of content nor of form alone, but always of form in relation to content, of what the work is quite as much as of what it might also be in lts imaginative reference and suggestion. From this tense and critical relation the work derives all emotional force and imaginative profundity.

Bacon has often said that hia work is abont nothing other than itself. *There is* no *specific* message, programme or polemic *to* it, and to look for one is to miss the point. His effort is directed only to realising each image physically on the canvas, to give it a life of its own, a kind of independence tn shift for itself, and in tha process to exorcise one of those images wbicb seem to have haunted his vision for so long, to lay the ghost at last, if only *for a moment. The scream*, the disembodied mouth, the teeth lika interlocking bits upon a drill, all recur time and again, and the popes and animals, too, subsumed these 20 years past in the obsessive, insistent reinvention, restatement nf the figure, isolated and central within lts circular arena; that might be transparent cell, or cage, or tomb.

Thus the irony that inevitably we do begin *to* read the work, to draw from it our own lessoo of alianation, perhaps, and despair—the kind of cosmic desperation that we share with Vladimir and Estragon, or indeed Lear in the wilderness, but which painters seem never consciously to engage. It is when we look at the self-portraits of Rembrandt *and* of Van Gogh too, and his *last* land *scapes*, that we *sense* a closer visual parallel, an unflinching but utterly absorbed and unself-conscious consideration of humanity, of reality and what it is to be alive.

Bacon is more indirect, or so lt might seem at first; but the more we look at the work *throughout* (*especially* that of the later period) the less significant *the distortion and* grolesquerie becomes. It begins to seem no more than a mask held up to deflect attenhion, a defence or smokescreen; and we begin to realise how calm and self-contained these paintings are, how beautiful and unforced and natural. There is no horror or disgust in the later rooms at all, but rather an easiness *in* the statement, and familiarity in the imagery, and a sense overall of quizzical and relaxed detachment.

In short, it seems suddenly to be so much more straightforward than we wonld ever bave thought it, portralts to be read not as morallties hut seen just as portraits, touching and exact. And so it is with even the earliest work that was once *so shocking* and now fills the first four rooms at the Tate to give us the essence of that exhibition of 1962. I can remember that my own clear feelings of shocked excitement, hot also my recognition of a consummate *handling* of *paint*, and passages here and there were extremely beautiful. The excitement remains, but not the shock, and the painterly authority and the physical richness and beauty of the surface of these canvases are inescapeable.

Bacon had returned to painting ln 1944, having destroyed or disavowed his earlier work, and then been inactive for a year or two. He showed himself immediately to be a master, whicb is where we come in, with the surreal expresslonism of his figures at the foot of tha cross (*which triptych is now* in the Tate's own collection) and the other similar studies of sinister, crouching, soarling figures. The imagery then becomes more fluid, the toucb lighter, the mood more openly experimental and deceptively casual. It is at this moment, with tha portrait studies, the Blake death masks and the *baboons and wrestlers of the* middle 50's, that we can see just what Bacon has meant all along by his open admiration not for Rembrandt, nor for Van Gogh, but for Degas.

How interesting, and wbal a true measure of the artist whose work provokes it, that we can emerge from this *great* exhibltion with the thought of Degas, at once the most ambiguous and the most accessible of painters of *his* time, certainly the greatest draughtsman and perhaps the greatest artist. We think of the speed and the touch, of the experiment and the adventure: and who can now say, with his monotypes now on show at the Hayward, that Degas was not the first of the expressionists. The mark lies on the surface and we *stand back* with the artist, curious to see what it will do.

Alastair Muir

Francis Bacon at his Tate Gallery exhibition

Architecture/Colin Amery

Discipline needed in gardens

It is the season for the contemplation of the garden. The annual Chelsea Show—that strange national combination of plantsmanship and the *picturesque* — presents the visitor with a series of ideal visions. Every year there is a small section of the display devoted to garden design in the form of drawing, as well as the range of imaginatively conceived *model garden layouts*.

Garden design is one of the *areas of the art of gardening* once occupled by great English masters. The recent deaths of Russell Page and Lanning Roper have deprived the art of two of lts most distinguished practitioners and influences. It is hard, at the *moment, to see who* of comparabla quality is on the *horizon*. This year's Chelsea display offered little comfort.

I *should* like to suggest to the Royal Horticultural Society that they upgrade the subject of garden design in future shows. This year the drawings on display were somewhat concealed in their own small tent where *there was nowhere* to sit or meet the designers for fruitful discussions. It also seems a limitation to show plans of gardens and a few photographs without any three-dimensional aids. It is difficult to imagina how a design and its planting would work wben you are presented with only a numbered chart of varying species.

There was one fascinating small town garden: an exercise in *illusion and perspective* designed by e quartet of names. Boisset, Carter, Fletcher and Tate. Mr Carter, I know, was the man behind tha excellent Repton exhibition; the histurical influences are very apparent.

Their *garden* was for those of austere architectural tastes. Arcades of dark green *stained* timber, giant keystones and walls of mock tufa may sound rather grim. In fact they provide that kind of geometric pleasure found in the best Italian Renaissance gardens. *Lines* of box and gravel and water complete the llst of elements used by the designers to achieve their elegant concept.

It was a great contrast to many of the lusher gardens at Chelsea, but it lacked the sense of *Irish fantasy* that is very much present in the work presented at Chelsea by Alfred Cochrane, Jeremy Williams and Anthony Keane for the first time this year. If you want your park landscaped, or an amusing pavilion nr conservatory added to your collection of follies, these Dublin-based architects are the men for you. They seem to be working on a scale that was more familiar to the landscapers of the 18th century.

Londoners have always been fortunate to bave Clifton Nurseries to meet their borticultural needs; a visit to their recently much-enhanced premises off Warwick Avenue is now douhly pleasurable. The architects Jeremy and Fenella Dixon bave added a new shop, and they are *casting sensitive* eyes over the rest of the site.

Nurseries tend to be cluttered places, a skilled architectural band is needed to impose an elegant discipline. This is exactly what the Dixons bave done for Clifton Nurseries. The shop is an oak pavilion with a *slightly* nverscaled *roof* huilt at right angles to the green*house*. It bas the feeling of an agreeable cricket pavilion with its Hidcote timber columns and tiled floor in black and wbite. I bope the architects will be able to re-order the display of bedding plants that is rolled out daily undar an unworthy temporary canopy.

It is possible now to visit a distinguished shop adjoining the nursery where garden architectural ornaments and statuary are displayed. I was interested in the products of the Landscape Ornament Company who are *making replicas* and *some* new garden *objets* from a new material: Kett Codestone. This is a version of the old-fashioned, long-lost Coade Stone—a compositinn which can be carved, and will weather attractively. It is *good* tn *know* that *a* triton's head or a shell basln nr an obelisk are now within reach of the more extended pockets.

The glimpse of a garden paradise that Clifton Nurseries nffer in microcosm is only a hint of what could be availahle if the general standard nf garden design could be raised to their discriminating level.

*

The final rejection of the Mies van der Rohe design for Mr Palumbo's Mansion House Square, announced last week, marks a wise end to a long and often inflated battle. *The* City of London would be well advised *to study the inspector's report* with some care. It is e careful and intelligent guide to the future of the historic quarters of the City.

It by no means rules out redevelopment, but it calls for care, *in future*, to ensure that surroundings are respected and that the *imposition* of overscaled visions that belong somewbere else does not occur again.

Tha Secretary of State took the decision, offering with it important guidelines for the humanising of tha City of London. It was long overdue, and to be welcomed by all men of good will. May it also help *to* end the *polarisation* of criticism that has been one of the least useful aspects of the Palumbo affair.

Simon Holt/Bath Festival

Max Loppert

William Mann, formerly music critic of TV Times, *retired from* newspaper reviewing to take on *the* artistic directorship of Bath. The 38th festival, which began last Friday, is the first to reflect his catholic tastes, atrong convictions, and lively, communicative enthuslasms. It is also the last, for a short while before the festival opened it was announced that a new director would be taking over for the 37th. In view of the notabla attractions of the 1985 programme — a splendid mixture of forms, styles and themes, in which the main musical anniversaries are being celebrated in *a wholly undutiful way—one is* bound to wonder why lt is that Mann's appoinument *was* not renewed. In fact, I think we should be told.

One of the signs of the 1985 director's alertness of taste is his choice of Simon Holt (b. 1958) as featured composer—four *works* of his are being played during the course of the festival, including the première of a commissioned clarinet quintet next Saturday. To the wider musical public Holt's *name is probably unknown*, but to followers of the British contemporary scene he is already recognised as a young composer of outstanding gifts, a fastidious placer of notes who is also a areative voice of distinct character. And so the Bath mark of recognition could not bave been more timel*y*.

The two Holt works played in Saturday's concert by *Music* Projects/London at the Guildball *have already been heard in* London. In *Mirrormaze* (1981) a large chamber ensemble, mainly wind, constituted in two roughly equal halves, is used to set up a maze of reflecting and contrasting little cells. It is a *tour de force* of strikingly placed invention, of bustling, strident sounds and figures cut into each other in sharply outlined patterns; a "*skill centre*" provides a dramatie contrast to the *activities* of the enclosing outer parts. *Era madrugada*, whose first performance (by the Nash Ensemble) I saluted in these columns last year, is even more remarkable—an evocation of Lorca's mysterious poetic nocturne in bleached, beauti*ful* combinations of sound and silence, *with a virtuoso piano* cadenza to crystallise dramatic themes suggested earlier.

In both works Holt's skill in refining and varying texture forms an essential part of the listener's fascination, yet in each the aim is more ambitious, and, indeed, more sophisticated; it is the boldness of the germinating idea and the completeness of *its working-out* that separate Holt from most composers of his generation. The performances by Music Projects under Richard Bernas were authoritative in their grasp and presentation—in the Lorca-inspired piece there was a care for attack and colour-shading, highly persuasive, that the première performance had lacked. Works by Rolf Gelhaar, Malcolm Scott, and Malcom Hayes, all enjoyable, all no less eloquent in their presentation, belped to make this a new-musia concert of genuine festival standard.

Waste/Lyric

B. A. Young

This marvellous play has not been done professionally, as far as I know, since the Leatherhead production in 1966. I wrote then that "managements in search of all-star vehicles should hit on Granville-Barker before we *have to sit through the rest* of Wilde." Now a company has done just that thing and the Royal Shakespeare Company has filled the stage with *star* playing. There is no performance in this production, directed by John Barton, that is less than excellent.

The plot is simple, even melodramatic. Henry Trebell (Daniel Massey) is about to be invited to join the Cahinet and see through *Parliament* a *Bill* for the disestablishment of the Church of England. A short, unserious affair with Amy O'Connell (Judi Dench) leaves ber pregnant. She goes to a quack for what was then usually called an "illegal operation," he makes a mess of it and she dies. Fearful of the inevitable scandal, Trebell shoots himself.

What magnifies such a story to its ultimate distinction *is Harley* Granville-Barker's superb drawing of the characters, and the quality of the conversation be gives them. The play begins almost in Wilde country, at a country-house party where Trebell's chances are discussed, and where Trebell begins his brief affair *with Amy, a mature coquette* separated from her busband, who is a Roman Catholic and a Sinn Feiner and lives in Ireland. Politics move more and more into the foreground. Disestablishment was a clever subject for Barker to have chosen, a matter that must have seemed of critical importance to most voters, but one that would not automatically attract support from any political flank.

The array *of Ministers* and aspiring *ministers* we are shown covers *the political gamut*—Horsham, the Prime Minister (*an outstanding performance by* Tony Church), never averse from an easy way out; Blackborough, to whom David Waller has given a Midland accent to emphasise his concern with the workers; Farrant (David Killick), the socialite whose political judgments are expressed in such phrases as "He's a good fellow;" Cantelupe (Charles Kay, another beautiful vignette), the devoted churchman.

Mr Massey's Trebell is a political show-off. He has a way *of fixing his features*, the deep-set eyes and firm-set mouth, into a *menacing expression* and driving them like a battering ram inlo *his* colleagues' faces.

This is essentially a man's *play. Amy has* only two scenes of importance, an unwilling love scene with Trebell and a collapse into tears when she confesses her pregnancy. There is a good part for Trebell's sister Frances (Sara Kestelman), who has given up teaching to look after him. Both these parts are played to perfection. So indeed are the other society ladies, who *talk as if Wilde's characters* had become intelligent. There are also two more important parts for men, Gordon Gostelow as Amy's husband Justin, a curt Irish intellectual, and Trebell's doctor (Oliver Ford Davies), whose evidence at Amy's inquest may prova vital.

Tha play was written in 1907, but banned by the censor becausa of *its talk of abortion*. Barker re-wrote it in 1926, but it is clear that 1926 will not do for such a story, where many of the points might then be settled on the telephone. John Barton has made his own amalgam of the two versions.

Christopher Morely and *Louise Belson* have designed the three scenes, which include a classic "*smoke-filled room*" in the Prima Minister's bouse; and the music, including, as Barker insisted ln his stage directions, Chopin's Prelude Op. 28 No 20, "from beginning to end," is played by Christopher Duncan.

Perlemuter/Elizabeth Hall

David Murray

Snowy-haired and frail — much frailler than at his last appearance in the Elizabeth Hall — the octogenarian Vlado Perlemuter returned last Thursday to play Chopin, Ravel and Fauré. The heart of the matter *is still in him and* tha fingers are astonishing — a testimonial to what an *intensive* early *diet* of Moszkowski *études* can do for you. Above all, by trainig ad lifelong loyalty Perlemuter remains our great link with the masters of the French piano; he studied under Cortot when Fouré still directed the Conservatoire, and be learned all Ravel's music with the composer himself.

The self-effacing simplicity of Perlemuter's style is intact, and his grasp of strict architectural proportions—every passage with its just weight, nothing unduly spotlit or *indulged*. Fauré's majestically gentle Theme and Variations will work *in no* other way, and in Ravel's *Miroirs* be proved again how the musie gleams when its watchmaker's precision-mechanisms are respected. The delicacy with which be distinguishes sound-levels is probably inimitable.

There were smudges: some passing *fumbles, too* mucb lingering pedal (quite uncharacteristic), *memory-squalls in* "Une barque sur l'océan." "La vallée des cloches" was magically resonant, and "Oiseaux tristes" perfect. The completa sequence of Chopin's four Ballades was not only a feat of stamina, but a lesson in patrician style, expressively direct and unculttered. All this was received with the warmest admiration; Perlemnter as usual looked benovolently pleased.

Arts news in brief . . .

The seventh annual MusICA series starting on July 7 at the ICA will concentrate entirely on classical music written in the 1980s.

Composers represented include Vic *Hoyland*, Walter Zimmermann, Manfred Stahnke and Corrado Pasquotti.

There will be a total of eight Sunday evening concerts.

*

English soprano Kym Marsh Amps has won the 1985 Maggie Teyte Prize, which consists of a prize of £500 and a recital to be arranged.

*

Belfast-born Kenneth Montgomery, at present chief conductor of the Netherlands Radio Orchestra, bas been appointed tha first artistia and musical director of Opera Northern Ireland, which is the result of the 1984 amalgamation of Northern Ireland Opera Trust and Studio Opera Group.

La Bohème/Covent Garden

Rodney Milnes

The Royal Opera'a latest revival of Puccini's opera is interestingly cast—in the event more Interestingly than was planned, *following* the *withdrawal* of Gabriela Benackova as Mimi. The four Bohemians have aeldom before looked so young in John Copley's production (here pointedly rehearsed by Richard Gregson) or indeed sounded so young: maybe none have truly Italianate weight of tone, for an ideal performance, but all bring compensation in the *form of* fresh, appealing youthfulness and an imaginative approach to text, musical phrase and ultimate meaning.

If the Canadian barltone Gino Quilico threatens to steal the show as Marcello, this is because ha has both the easiest assignment and the natural gifts for it: dashing good looks, a swashbuckling stage manner, and *well focused*, cleanly projected tone. But the young Hungarian tenor Denes Gulyas (Rodolfo), making his British debut runs him close. His timbre sounded on the thin side at first (be took half of the first act to settie into the house), but it is uncommonly secure and well *placed—the* to*p C range* out generously. Mr Gulyas uses a malting *mezzo voce* and a gift for colouring notes to invest many a phrase with distinctive eloquence: it is not often that the familiar lines have sounded *so freshly minted*. He is also a handsome man and an easy, humorous naturalistic actor.

With Willlam Shimell as Schaunard the most complex of the four (he suggested mucb with his guarded greeting on Mimi in Act 2), and Matthew Best a near teenage *Colline*, tne ladies may by comparison have seemed a little mature; so be it, since tha opera is to some extent about the callowness of the young male animal compared to the female. Ana Maria *Gonzalez, Spanish born but who* ia mainly active in South America, was originally cast as Musetta, but moved up to Mimi — a pitty, since her edgy, penetrating tone and knowing demeanour would be better suited to the former role. Hers was an interpretation minutely calculated down to the last, fragile, mannered gesture, *inviting applause, and correspondingly* as artificial as the flowers that Mimi embroiders. Nellie Miriciolu stepped in as Musetta and sang with characteristic warmth, flair and imaglnation.

Binding these slightly disparate principles together was Sllvio Varviso, one of today's wisest, and most practical of operatic conductors, and one whose unshowiness means that he is seriously undervalued in a starry world. Occasional muzziness of ensemble mattered littla in the face of such innate understanding of how Puccini's musie works, of such natural and unforced control of lls ebb and flow. The orchestra played beautifully fnr *him*, revealing all the subtlety of the *composer's instrumentation while* never covering the singer'a words. A most distinguished reading.

Getty money for UK treasures

The J. Paul Getty Trust which, apart from huying up the world's masterpieces, also bas an obligation to preserve artlstic treasures, has given £66,000 to the Historic Houses Association and £35,300 to the National Trust.

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† Call deposits £1,000 and over 9½% gross.
‖ 21-day deposits over £1,000 10½%.
¶ Mortgage base rate.
** See Provincial Trust Ltd.
§ Demand deposits 9½%.

Arts Guide

May 24–30

Music

LONDON

Academy of St. Martin-in-the-Fields directed by Iona Brown. Handel, Poulenc and Tchaikovsky. Queen Elizabeth Hall (Wed). (928 3191).

English Chamber Orchestra conducted by Edward Downes and Howard Blake with Thea King, clarinet. Stravinsky, Blake, Halstead, Schönberg. Queen Elizabeth Hall (Thur).

New York Philharmonic Orchestra conducted by Zubin Mehta. Bach, Crumb and Mahler. Royal Festival Hall (Thur).

Ronnie Scott's, Frith Street: Bireli Lagrene, guitar. (439 0747).

PARIS

Ensemble Orchestre de Paris — Finlandia Sinfonietta conducted by Okko Kamu, Paul Tortelier, cello: Sibelius, C P E Bach, Schönberg (Thur). Salle Gaveau (563 2030).

Maitrise Radio France conducted by De Rozel: Caplet, Delibes, Jolivet, Poulenc (Thur). Saint-Louis-en-l'Isle Church (524 1516).

Maurizio Pollini, piano: Bach (Tue, Thur). Théâtre des Champs Elysées (723 4777).

NETHERLANDS

Amsterdam, Concertgebouw. Recital Hall: An evening of Indian music and dance with Narendra Bataju, sitar, Ustad Zamirahmad Khan, tabla, and Irshad Hussain Khan, tanpura (Mon); Bob van Asperen, harpsichord. Bach (Wed); The Utrecht Conservatory String Orchestra under Eli Goren. Avison, Mozart, Webern, Bruckner (Thur). (71 8345).

Rotterdam, De Doelen. Recital Hall: Daniel Wayenberg, piano, with the Daniel Quartet and soloists. Thomas, Franck, Saint-Saens (Tue). (14 2911).

VIENNA

Bach Mass in B minor: Gachinger *Kantorei and the Bach Collegium* of Stuttgart conducted by Helmuth Rilling with Arleen Auger, soprano, Julia Hamari, alto, Aldo Baldin, tenor, and Andreas Schmidt, bass. Konzerthaus. (Thur).

SPAIN

Barcelona: Palau de la Musica: Dallas Symphony Orchestra conducted by Eduardo Mata with James Galway, flute. Schubert, Griffes, Rodrigo and Mahler (Wed).

Madrid: Teatro Real: Dallas Symphony Orchestra. As Bilbao. (Thur).

WASHINGTON

National Symphony (Concert Hall): Conductor, Mstislav Rostropovich; trombone, Milton Stevens; clarinet, Loren Kitt; harp, Dotian Carter; cello, John Martin: Lumbye, Parris, Weber, Debussy, Boccerini, Ravel (Tue); conductor, Mstislav Rostropovich; violin, William Steck: Bach, Brahms, Copland (Wed, Thur). Kennedy Center (254 3776).

CHICAGO

Chicago Symphony (Orchestra Hall). Conductor, Erich Leinsdorf: All-Bach programme (Thur). (435 8122).

Opera and Ballet

PARIS

Cesar Franck's Stradella, a work without orchestration conducted by John Burdekin, singing by the Opera's Ecole d'Art Lyrique, with Jean Dominique Burroni/Gerard Parmentier at the piano, produced for the first time at the Opera Comique (296 0611).

Debussy's Pélleas et Mélisande. Teatro Alla Scala de Milan production with the Paris Opera and the Théâtre Des Champs Elysées conducted by Hans Zender, production by Gian Carlo Menotti with Pélleas sung by Laurence Dale/Francois le Roux, Mélisande by Barbara Hendricks/Colette Alliot-Lugaz. Théâtre des Champs Elysées (723 4777).

VIENNA

Staatsoper: Il Trovatore conducted by Gusdagno with Bonisolli; Boris Godunov; Aida, Romeo and Juliet ballet by Prokofiev. (53 24/26 55).

WEST GERMANY

Frankfurt, Opera: Don Pasquale, La Bohème has Peter Keien as Rodolfo and Ilona Tokody as Mimi. Falstaff has Louis Quilico. Walter Raffeiner is repeating his much praised performance as Max in Der Freischütz. (25 621).

Stuttgart Württembergisches Staatstheater: Manon Lescaut returns with Urszula Koszut and Rodiger Wolansky. Cav and Pag are of *respectable standard*. (20 321).

LONDON

Jumpers (*Aldwych*): *Confident almost* sober revival of Tom Stoppard's glittering comedy of love, murder and linguistic mayhem among the logical positivists, with Paul Eddington a more earth bound George Moore II than was Michael Hordern, Felicity Kendal *delightful as his retired* musical comedy wife. Peter Wood directs. (836 6404, credit cards 379 6233).

Amsterdam, Brakke Grond Theatre (Nes 45). The Kleine Opera with the world premiere of Meraviglia by Roland Voortman, with an English libretto by Christiaan M. van der Eijk. Directed by Jeroen Lopes Cardozo and conducted by Roderick Shaw. Lucia Meeuwsen in the title role of an ageing diva who exists solely in the imagination of an authoress, *sung by Marianne Blok*. Ends June 1. (24 0394).

NEW YORK

American Ballet Theatre (Metropolitan Opera House): Mikhail Baryshnikov and company, including Natalia Makarova, Cynthia Gregory, Patrick Bissell and Clark Tippet dance a mixed programme from their eight-week repertory. Ends June 15. Lincoln Center (362 6000).

WASHINGTON

Metropolitan Opera (Opera House). The American tour includes repertory performances of Lohengrin, Cosi fan tutte and Simon Boccanegra. *Kennedy Center* (254 3770).

FINANCIAL TIMES

BRACKEN HOUSE, CANNON STREET, LONDON EC4P 4BY
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Tuesday May 28 1985

Lessons from Lear Fan

THE LEAR FAN failure is not just another De Lorean disaster. Although Northern Ireland and the UK taxpayer have lost substantially as a result of the two unsuccessful ventures, there are big differences between them. Unlike De Lorean, the Lear Fan project took in a large amount of private sector finance, and there has been no suggestion that the funds were misused. The British Government took a considerable time evaluating the venture before it agreed to put up funds, and the failure appears to stem from shortcomings in technology rather than in the market place.

However, in both cases the Government made a major commitment to what looked even at tha time like very high risk ventures. In both cases, the interests of the taxpayer and of the project's backers were not identical: while the British Government wanted a production facility to show for its investment in Lear Fan, the Americans' first priority was to develop the aircraft; and tha consequences of failure are equally grim. High hopes for more jobs have been dasbed in an area where they are most desperately needed and, although workers in Northern Ireland have not been given a chance to show their skills, the region's image in the international market place has been further damaged.

Job creation

The public sector accounts for nearly half total employment in Northern Ireland and, given the combination of high unemployment and civil strife, it would be absurd to conclude from these experiences that the Government should not concern itself with job creation in the region. On the contrary, there has to be a willingness to take risks in a bid to generate stability and create wealth.

As a result of the De Lorean fiasco, these risks have now to be measured against a list of guidelines which has been drawn np for the future operations of the Industrial Development Board. Before deciding on an investment, the Board has among other things to have access to relevant technical skills and it must make an assessment of management quality. Agreements are normally to be based on the principal of phased investment, with a maximum initial commitment from private investors. Nominee directors have a clearer role to play and much more attention is to be paid to the fine print of the legal and financial details.

This is all very basic stuff, and should become standard practice in the relevant Whitehall departments. The good news is that Northern Ireland is not alone in adopting a more critical approach to inward investment. In the South, the Irish Government has put its own Industrial Development Authority on a tighter rein. As a result the Hyster Corporation of the U.S., which has much experience of playing communities off against each other, has moved a new investment to the Netherlands.

Without going as far as Lord Bruce-Gardyne—who suggested in a recent debate that Ministera should be required to put their own money in such high risk projects—there may be other precautionary measures to consider. In particular governments need to be especially wary of glamorous, internationally mobile projects which have no roots in local industry or markets. The De Lorean venture could have been undertaken in Puerto Rico as well as in Belfast. In the case of Lear Fan, the original commitment was to develop the main manufacturing facility in Northern Ireland, but as time went on it looked increasingly likely that Ulster'a best hope would be as a supplier of components to North America. Now even that has been dashed.

The risks inherent in such undertakings are bound to he multiplied if the production site is selected primarily for financial, as opposed to commercial, reasons.

Policy object

Who are the main beneficiaries of these prestige projects? The workforce, yes—provided that the plans are successful. But managers, stockholders and creditors will also benefit handsomely from success, and are also likely to be better able to bear the risks of failure. For the government, the main policy object of this type of financial support should be to smooth the path of economic adjustment. This may be best achieved by channelling available funds into more modest ventures, into training and into the infrastructure, rather than by taking a big gamble on a highly visible, highly risky one-off venture.

The jovial face of deregulation

THE British Prime Minister's declared determination to press on with her contentious programme is not at the moment inspiring mnch enthusiasm among Conservative backbenchers. It may be necessary to overhaul welfare, and ultimately helpful and realistic to privatise pensions.

Introducing small airliners to dockland, and a lot more big ones to the skies of Essex, is likely in the long run to create new centres of activity; but with less than three years to go before an election, backbenchers with small majorities are decreasingly interested in tha long run. In the short run all these policies—and for the moment, the Government's entire approach, are unpopular, or at least offensive to vocal minorities. They want to do something popular.

Different face

Happily, there are one or two projects, strongly favoured by the Prime Minister herself and by her closest advisers, which would put quite a different face on commercial freedom. Tha current drive to legalise Sunday trading would fall into this class; but as the Home Secretary has pointed out, the law is already so widely flouted that those who want to shop on Sundays are likely to give credit to the traders rather than to the Government.

The licensing laws, on the other hand, are still in force — except, notably, in Scotland. The Scottish experience of more flexible hours, widely reported to have been highly encouraging, will be officially analysed within a few weeks. This would be a good opportunity for the Government to bring forward the statement, promised before the end of this year, on its own intentions, and declare its hand for liberalisation.

This has in fact become a much less contentious subject in recent years, with the general decline of Sabbatarian and other restrictive attitudes to innocent enjoyment. The brewing industry, which used to suffer from what might be called a lump-of-trade fallacy, and feared that liberalisation would simply increase costs has now swung round in favour.

The licensed victuallers have also become much more enthusiastic, but they are still discussing among themselves what form of flexibla restrictions they would like to see. They are an influential group, and the odds must be on some British compromise, allowing much more freedom within still restricted hours. Free-for-all is still a term of abuse in Britain.

Mrs Thatcher should go the whole way, and inscribe free for all, without hyphens, on her banner. Residential areas need to be protected against noise and commotion in the middle of the night, hut in commercial centres, especially where public transport is readily available, it is as sensible to protect the public against alcoholism by restricting hours as to impose a curfew to prevent burglary.

A rather more difficult subject is the liberalisation of the granting of licences. Restrictions have created a scarcity value for licensed premises which is reflected in rents and the prices at which businesses changa hands. A wider freedom, which is desirable, may have to be introduced rather slowly and under safeguards.

Scarcity value

The aim should still be liberalisation, though, not just as a contribution to freedom and joviality but to employment, tourism and free competition. The risks are much less than in the current wave of financial deregulation and the popular rewards much higher.

Another popular piece of liberalisation, the end of the solicitors' monopoly of conveyancing, is already a matter of hot contention within the Cabinet. Here again is s popular cause where Mrs Thatcher should follow her instincts. If residential landlords are to be allowed to meet market demand, as is rumoured, so should pub landlords; if the miners' union is to be faced down, so should the lawyers' union. Deregulation should be a cheerful process as well as a challenging one.

THE FUTURE OF BRITAIN'S WELFARE STATE

Why an overhaul is long overdue

By Michael Prowse

AS THE recent VE day commemorations reminded us, Second World War Britain is now a distant and unfamiliar country.

There is no reason why the social and economic nostrums of the war-torn 1940s should have mnch purchase on the problems of the 1980s. Yet the form, if increasingly no longer the substance, of Britain's social security system was laid out by Sir William Beveridge as long ago as 1942.

An overhaul of the system—a rethinking of priorities—is by any standards long overdue.

Early in June, Mr Norman Fowler, the Social Services Secretary, will unveil a Green Paper, the culmination of reviews lasting almost 18 months.

He bas done nothing to discourage the paper being regarded as a second Beveridge report. Yet if the extensive leaks are any guide such a comparison would be inappropriate. Beveridge was driven hy a conviction that poverty could be eradicated, that state charity for the poor could be made redundant, and that in "social insurance" a panacea waa at hand. Mr Fowler appears to lack a comparahle vision: his reviews have been dogged hy clashes with the Treasury and claims that they are really a cost-cutting exercise.

Beveridge's concept of social insurance still has appeal. The idea was that individuals should insure themselves against contingencies such as unemployment, sickness and old age. Since this could not be done in private markets, the state would play the role of insurance company. Everybody in work would pay stata insurance premiums called national insurance contribntions. Benefits paid out, as in the case of house or motor insurance, would be an actuarially fair return on past contributions.

Social insurance would thus differ from charity. Nobody whose house hurns down hesitates to demand compensation from his insurers and likewise nobody who becomes unemployed would hesitate to demand compensation from the state. There would be no call for means-testing: wealth is irrelevant, if you have paid the premiums you deserve the insurance. There would be every reason why NI pensions, unemployment benefit and so on should be earnings-related: the contributions or premiums are earnings-related.

Yet attractive though it sounds, Beveridge's social insurance concept has proved unworkable in practice. As the Institute for Fiscal Studies (IFS) pointed out last year, benefits based on past contributions cannot be relied upon to meet current subsistence needs. The insurance principle is "too rigid to cope with the wide and changing range of circumstances which can lead to hardship."

Even by the late 1950s the pretence of social insurance was apparent: NI contributions were levied at the rate needed to meet current outgoings — in effect, state charity was being financed by general taxation. Moreover, an ever-increasing proportion of the poor have sidestepped the national insurance fund altogether: today about 60 per cent of the unemployed and 20 per cent of pensioners rely on means-tested supplementary benefit.

Curiously enough, as the relevance of the contributory principle has faded, Ministers have become increasingly vigorous in its support. They repeatedly deny that NI contributions are just another tax. Yet this Government has done more than most to eliminate the insurance content. It has, for example, abolished earnings-related sickness and unemployment benefit even though contributions are based on pay.

Mr Fowler's Green Paper is expected to cap this by announcing the phasing out of tha atate earnings-related pension scheme (Serps) and simultaneously re-affirming the Government's belief in the contributory principle. The danger is that the outmoded rhetoric will prevent the logical fusion of NI contributions and income tax.

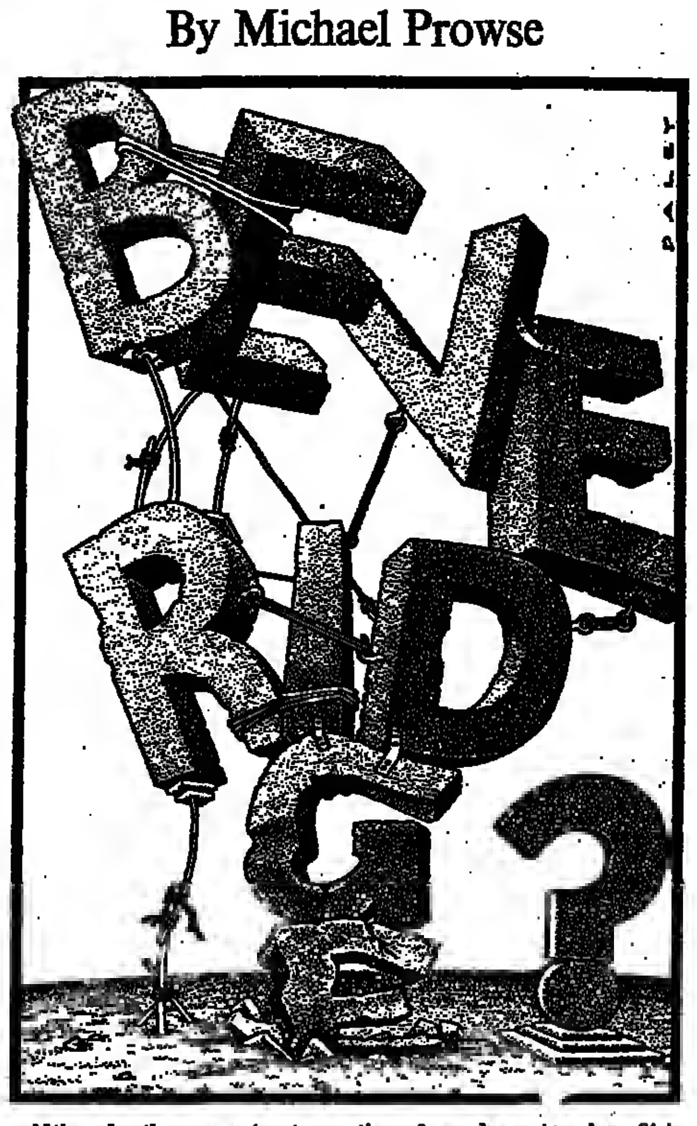
Beveridge's vision has also lost relevance because of structural changes in the labour force. His typical worker was a full-time male supporting a dependent wife and children. Yet, as Ms Lesley Rimmer of the National Consumer Council (NCC) has pointed out, married men with dependent children and non-working wives now represent only a fifth of the male labour force. There has been a huge growth of female and part-time workers who are not well covered by the NI system.

Beveridge also assumed that provided a man had a full-time job he would be abla to keep his family out of poverty. Yet a prime focus of tha Green Paper will be how to help the working poor. Wages are sufficiently low and our definition of poverty sufficiently enlightened that the low paid with large families can be worse off than pensioners or the unemployed.

If social insurance is discarded as a solution to Britain'a welfare muddle, what are the remaining options? Two are usually cited: greater reliance on universal benefits and more means testing.

Child benefit of £6.85 a week paid to the mothers of 12m children is the prime example of a universal benefit: it is payable regardless of a family's wealth and regardless of NI contribution records. Supplementary benefit for the non-working and family income supplement (FIS) for the working poor are prime examples of means-tested benefits — independent of contribution records but withdrawn as income rises.

Means-testing — what Mr Fowler would rather call selective targeting of assistance—has come under relentless attack from various pressure groups. They argue, with some justice, that it is impossible to withdraw a benefit from somebody as his other sources of income rise, without damaging his incentive to earn that income.



Although the poverty trap affects relatively few families—a few hundred thousand—it is still severe. The earned income of a couple with two children can rise from £50 to £120 a week and yet because of the withdrawal of FIS and housing benefit and the onset of taxation, the family may end up only about £2 a week better off.

There is a second chronic problem. Means-tested benefits are often left unclaimed—the ignorant and the proud remain in poverty. The most recent estimates suggest only 50 per cent, 50-70 per cent and 65-75 per cent of those entitled to FIS, housing aid and supplementary benefit respectively claim the money.

The problems have led the NCC to assert "it is our starting point that we want to see the phasing out of means-tested benefits." The NCC is pressing for a genuine "new Beveridge" solution with benefits related to responsibilities like child rearing or contingencies like unemployment.

Mr Michael Meacher, Labour's shadow social services spokesman, has called for the abolition of supplementary benefit in favour of a new "income protection plan" which would pay benefits irrespective of individual circumstances. More radical still are the proposals of the Basic Income Research Group (BIRG). Its aim is: "To guarantee to each man, woman and child the unconditional right to an independent income sufficient to meet basic living costs. Its main purpose would be the prevention of poverty as opposed to mere poverty relief."

Beveridge's vision has lost relevance because of structural changes in the labour force

A basic subsistence income or social dividend payable to all as a badge of citizenship is a logical conclusion for supporters of universal benefits. As Mr Keith Roberts argued in BIRG's spring bulletin, it would mean that any wage however small would be a useful supplement. It would eliminate the polarisation of society into those who get benefits and those who finance them, and it would render irrelevant rules like a fixed retirement age—in effect people of all ages would be getting a state pension.

Sadly, like most simple ideas, a social dividend is not practicable: the cost would be prohibitive. It helps the poor in the most expensive way imaginable — by helping everybody else just as much at the same time. Even a very low dividend of about £20 a week, which is not really even a subsistence income, would require a basic rate of tax of 45-50 per cent.

The problem for Mr Fowler and other reformers is that none of the three available options — social insurance, means-testing or universal benefits — is particularly palatable. In the Green Paper, the Government, unsurprisingly perhaps, is likely to declare its adherence to all three approaches, even though they are mutually contradictory, because this will be the best way to contain critics from all parts of the political spectrum.

Thus Mr Fowler is likely to praise the contributory principle, declare child benefit sacrosanct — a useful way of helping the middle classes allocate income more efficiently over their life cycles — and sharpen up the tapers on supplementary and housing benefits. In short, he will attempt to muddle through with the existing compromise.

Of course, there will be winners and losers. Broadly, the old and the young will be squeezed to release resources for poor families whether or not the breadwinners have jobs. FIS is to be upgraded and called Family Benefit while the unemployed with families are to get more help through Family Premium. The Government is tacitly accepting that the existing supplementary benefit scales do not adequately reflect the cost of children.

The expected shift in priorities reflects both ideological prejudices and detailed research on the changing structure of poverty. More help for poor families is justified partly because, relative to wages, the value of child benefit has fallen by about 40 per cent since 1950. The relative squeeze on the old partly reflects the Government's view that as a group they have done comparatively well. The linking of pensions (and long-term supplementary benefit) to earnings during the 1970s opened up a sizeable gap between their benefits and those of, for example, the working poor with large families.

But the beefing up of FIS might seem to exacerbate existing incentive and take-up problems. However, government research appears to confirm that more generous benefits for poor families will not create serious work disincentives; unemployed heads of households do strive hard to find work. The proposed squeeze on the young without family responsibilities, on the other hand, reflects the Government's conviction that here incentive problems remain potentially acute.

The new means-tested Family Benefit should avoid the take-up shortcomings of FIS because it will be administered through the tax system. Employers will alter tax codes on the basis of information supplied by the Department of Health and Social Security. For tha first time employees' pay slips will reflect their family responsibilities.

Other Green Paper proposals will be more ideological. The elimination of 100 per cent rate rebates, for example, has less to do with social security reform than with the Government's attempt to increase the accountability of local authorities. If everybody, however poor, has to meet some of their housing costs, it is hoped the relative profligacy of some councils will become a matter of wider concern.

Mr Fowler's Green Paper faces two clear dangers. The first is that the howls of the losers may swamp any appreciation of its virtues: it will be written off as a somewhat callous cost-cutting exercise. The second is that it will fail to delineate clearly enough a new, and perhaps more modest, "post-Beveridge" role for the welfare state.

One such post-Beveridge blueprint was set out last year by the IFS. The state, it argued, should provide nothing beyond a safety net. At present, the social security system, viewed simply as a protection from poverty, is grossly inefficient: only 59 per cent of pensions, 46 per cent of NI benefits, 32 per cent of FIS and housing aid and 22 per cent of child benefits are actually needed, claimed the IFS, to keep the recipients out of poverty.

If scarce resources were used more efficiently—if, looking forward a few years to the computerisation of tha tax and benefits systems, all benefits (including basic pensions and child benefit) were means tested—up to £10bn of the £40bn social security budget could be redeployed as higher benefits for the very poor or as tax cuts.

In other words, if we could agree the only purpose of social security is to alleviate poverty, we could afford to be much more generous about our definition of poverty. If only half the £10bn were used to help the poor, the number with incomes no more than 20 per cent above the present supplementary benefit level could be almost halved.

The IFS panacea represents means-testing — albeit in theory an impersonal and automatic means-testing achieved mainly through the tax system — taken to its logical limit. It is therefore fiercely attacked.

Ms Ruth Lister of the Child Poverty Action Group, for example, warns that benefits confined to the poor would soon become poor benefits. "A social security system in which all classes have a stake and which guarantees security for all our citizens is an important force for integration in our society," she argues.

Mr Fowler may be wise to move only tentatively in the direction of more selective benefits: the political dangers of wholesale reform may well outweigh the puntative economic gains. Yet the penalty for eschewing radical change is that Mr Fowler will lack the resources to make any group very much better off. Since many may become a little worse off at best, his reforms may be unpopular. At worst they may be judged a failure.

Men and Matters

Keeping up with Harvey-Jones

The £171,000 Succession Question is being asked a little earlier than expected about ICI with the appointment to the main board of Ronnie Hampel and Tom Hutchison.

John Harvey-Jones, who must rank as one of the best advertisements for British industry in a long time, is not due to retire from the ICI chair until the spring of 1987.

He is everything that most ICI chairmen have not been—flamboyant, outspoken, and a media favourite. Only in ability has he shown much likeness to his predecessors, pushing the group's profits over the £1bn mark.

But Harvey-Jones is determined to retire as planned. He has even bought a new home in South Wales in preparation—and is apparently already in the throes of moving from Essex.

So who will take over when be does go in two years' time? Hampel and Hutchison must be among the front-runners. Both bava served ICI in the U.S.—a key posting for those who wish to get to the top.

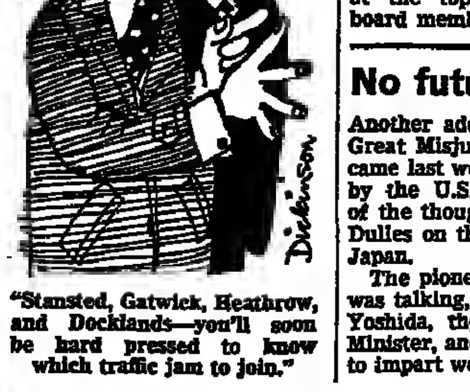
Hampel has been chairman of ICI's plant protection business and last year became responsible for agrochemicals worldwide. ICI's agricultural operations yielded a trading profit of £218m last year, making it the group's second most profitable sector.

Hutchison has been achieving minor miracles on the plastics and petrochemicals front. In 1982, this traditional ICI business lost £137m. In two years, Hutchison turned this loss into a £139m trading profit.

But this will not be a two-horse race. Another certain contender will be Denys Henderson, a Scot who started out as a solicitor before joining ICI and gaining experience in its explosives, fertilisers, dyestuffs, pharmaceutical and plant protection operations.

All three men are said to be "tough and committed," but could be beaten to the tape by a comparative outsider, like Alan Clements, the group's finance director.

In days of yore, the new chairman of ICI was normally appointed from among the three deputy chairmen. But Harvey-Jones abolished this second tier at the top and reduced the board members from 15 to 11.



"Stansted, Gatwick, Heathrow, and Docklands—you'll soon be hard pressed to know which traffic jam to join."

No future

Another addition to the list of Great Misjudgments of History came last week with the release by the U.S. State Department of the thoughts of John Foster Dulles on the trading future of Japan.

The pioneer of brinkmanship was talking, in 1955, to Shigeru Yoshida, then Japanese Prime Minister, and the tidings he had to impart were not good. Japan, he said, could never expect to aell much to the U.S. "because the Japanese don't make the things we want."

Thirty years later, the Dulles prognosis — hitherto kept in the decent obscurity of the State Department's files—looks a bit limp, to say the least. The flood of Japanese cars, electronics and other consumer goods has resulted in a $137bn U.S. trade deficit with Japan, and demands are growing in America for protection.

First rate

When the Department of Environment was canvassing for alternatives to the present system of rates, one of tha main prohlems, it found, was that local councils were not really accountable to local businesses which pay a large proportion of their revenue.

One solution put forward, William Waldegrave, junior DOE minister, told a CBI seminar, was to revive the old "business vote." Until its abolition some years ago, this gave businessmen an additional vote in districts where their plant was located.

If this had been reintroduced in extended form as Mrs Thatcher's chosen path of reform, some larger companies, notably GEC, might have ended up running all local government, Waldegrave suggested.

Some people, added Waldegrave — a former GEC employee — might think that would have been a good idea.

Penny-wise

Waste not, want not as they say. Woodside Petroleum, the small company with a big stake in Australia's vast North West Shelf energy project, announced last week that it had secured a US$1.65bn credit facility from an international consortium of 13 banks, including Barclays and Natwest.

Alongside the newspaper story of the deal, Woodside placed an advertisement announcing a hriefing on Thursday on the natural gas phase of tha development.

Even in the bold frontier town of Perth, eyebrows were raised at Woodsida's invitation to those who wished to attend to enclose a cheque for A$25 (about £15) entrance fee.

Granted, the news conference is at the Merlin, a new and luxurious five-star hotel, and includes a little light lunch. There will also be the chance to talk to Woodside directors and senior executives about the current state of the project.

But my man at the Merlin calculates the event should yield a small but respectable return for Woodside.

Waterproof

If you have ever stood red-faced while a customs officer fumbles through the intimacies of your luggage, spare a thought for Mike Gee, technical officer of the International Amateur Athletics Federation.

Gee recently flew into Heathrow from an international date in Hiroshima, Japan, with several urine samples to be tested at Chelsea College, one of about 12 centres approved to do this work for the Federation.

Customs officers viewed the samples with great suspicion—and it did not help when Gee explained that they were to be tested for drugs. Aha, reasoned one officer, possibla importation of prohibited substances.

It took Gee an hour to persuade customs to let him keep the samples. Now negotiations are afoot to allow these vital specimens to be given diplomatic bag treatment.

Hands off

Card in a Basingstoke shop window: "For sale, antique rosewood card table. No dealers."

Observer

FOREIGN AFFAIRS: STAR WARS

A new jerk in old reflexes

By Ian Davidson

WHEN Mr Casper Weingerger offered Europe the chance to participate in the $26bn Star Wars research programme, the U.S. Defence Secretary may have blieeved he was offering a sweetener to European critics of the administration's search for a new nuclear doctrine. Instead, he has precipitated a political debate in Europe which goes far beyond nuclear doctrine, or whether Plessey and Siemens could get a slice of the action.

In a sense, the history of Europe over the past 35 years has been that of the shifting ambivalances towards each other and towards Europe of Germany, France and Britain. In recent years, these ambivalences seemed to have been attenuated or at least muffled; since the Fontainebleau European summit it has seemed that each of them might be prepared to invest more heavily in their mutual commitment to Euorpe. But Star Wars, like a rubber hammer, has revealed that the old reflexes are still very much alive and kicking.

Herr Kohl's instinct has been to applaud and appease the U.S.

Since his election in 1981, President Mitterrand has cultivated the Franco-German relationship more assiduously than any of his post-war predecessors, notably in the field of military strategy. When the Germans seemed in danger of being thrown off balance by the controversy over Euro-missile deployment, he threw his weight behind the Kohl Government by posing in the unfamiliar French role of doughty champion of Nato solidarity. It began to look as though the Franco-German axis was becoming the backbone and the muscle-power of a more united Europe.

Yet no sooner does Mr Weinberger offer Europe the possibility of some participation in Star Wars research, than Chancellor Kohl rolls enthusiastically over on his back, even though he knows the French Government is hostile to the whole undertaking, computerised lock, space-based stock, and supersonic barrel.

Herr Kohl has indignantly denied that there is any tension between Bonn's links with Paris and Washington, or that there has been any cooling in Franco-German relations. Yet the indignation belies the denial. And in the slightly different context of the European Community, it is no longer so easy to assume that Germany will be an unequivocal champion of a more integrated Europe, especially since its recent veto on any cut in Community cereals prices.

The paradox is that the Germans' exposure as Nato's front line makes them particularly vulnerable to any shift in U.S. doctrine which points to a decline in the credibility of the U.S. nuclear deterrent; yet that vulnerability also makes them particularly reluctant to mount an overt challenge to such a shift. This paradox has been known for a long time; Star Wars has given it new relevance.

It is, of course, an oversimplification to imply that there is a single German policy. The Opposition is hostile to the whole Star Wars idea, and the Government is divided how best to handle the research and technology problem. Yet the salient fact is that Herr Kohl's instinct has been to appland and appease the Americans.

Superficially, Mrs Thatcher's knee-jerk has been similar: to approve Star Wars research, to welcome British participation in it, and to be (relatively) discreet in arguing against any Star Wars deployment. The difference is that Mrs Thatcher was motivated less by vulnerability than by concern for the special relationship and alliance solidarity, and by a naive belief that her twin-track posture would be a reasonable holding position.

In the meantime, it seems clear that official British thinking is evolving in complexity and subtlety on the subject of Star Wars research, and it is probable that when the Government gives a formal reply to the Weinberger invitation—which may not be for several months—it will be a far cry from Mrs Thatcher's initial enthusiasm.

It is obvious that the Americans will be interested only in the most advanced British technology; there is a clear danger, therefore, that British participation in Star Wars research will lead either to a brain drain of the best scientists, or Pentagon control of some of the leading edges of British research.

Hugh Routledge

Mr Caspar Weinberger, U.S. Defence Secretary.

Should the British Government be an intermediary in any research contracts? To do so risks contamination with the strategic objectives of Star Wars; not to do so risks forfeiting access to bits of British companies' research. This dilemma is particularly acute where research, already being done under contract to the Defence Ministry, might also be applicable to Star Wars.

But operational considerations are likely to weigh more heavily than abstract speculation. Nato is increasingly committed to the idea that it needs to strengthen conventional defence so as to reduce dependence on nuclear weapons. Last week Nato defence ministers approved plans to make good the more glaring conventional deficiencies, and gave conditional endorsement of a long-term programme which should make it possible to break up second-echelon Soviet forces with high-tech conventional weapons.

These weapons would depend critically on many of the advanced technologies which would also be central to any Star Wars research: sensors, target acquisition, super-accurate guidance, high speed computing, telecommunications, battle management. If Europe needs these technologies on the central front to compensate for reduced reliance on nuclear weapons, then it may not be in Europe's interest to allow its scientific capabilities in these areas to be diverted to the purposes of Star Wars.

Any transition to high-tech conventional defence would cost more money. The 1983 European Security Study outlined a plan which might cost $20bn extra over 10 years, and a more detailed follow-up study, just published, broadly confirms this estimate ($22.5bn over 10 years). This would be roughly equivalent to a 1 per cent increase in Nato's defence budgets. Last week, the Nato defence ministers reiterated their support for the idea of increasing budgets by 3 per cent a year in real terms. But everybody knows that this was just lip-service; the British Government, for one, intends no increase after this year, and President Reagan is being forced by Congress to accept a freeze in defence spending as from this year.

Some Europeans have heaved sighs of relief at the U.S. defence freeze, in the belief that it must undercut Senator Sam Nunn's campaign to withdraw U.S. troops from Europe if the Europeans fail to pull their socks up. They may also be encouraged by his latest move, to establish a $200m fund for Nato development of high-tech weapons. But if U.S. defence spending is to be a prime target in the deficit-cutting exercise (as seems inevitable), it is hard to believe that this will not have an impact both on U.S.-Nato expenditure, and on U.S. attitudes to European defence efforts.

If confidence in nuclear weapons as a substitute for conventional defence is being eroded; if that erosion is being accelerated by the underlying rationale of Star Wars; if money for defence is constricted all round; if the competition of Star Wars is threatening to raise the price and reduce the availability of European high-tech for conventional defence; then it seems to follow that European governments have little choice but to pool their limited resources in advanced defence technology. A fragmented response to the Weinberger offer may be ideal for the Americans, but it cannot serve European interests.

This may be the reason the British Government is showing belated interest in the French/Eureka idea for a European high-tech programme which closely parallels Star Wars research areas. British and German ministers declare that there is no conflict between Star Wars and Eureka. But since science teams are a scarce and costly resource, choices may have to be made; any serious exploration of the opportunities for European collaboration is likely to be exhausting and could become acrimonious, but it might be more intelligent than settling for a few crumbs from the Star Wars feast.

Of course, the French have their own ambivalence between rationalism and nationalism. A litmus test of their attitude will be whether they are prepared to adapt the interests of Dassault to those of Europe in the negotiations over the new five-nation European fighter.

The Star Wars research dilemma has underlined how difficult it is to compartmentalise, on Whitehall lines, the interactive issues. Nuclear doctrine, conventional defence, the technology gap and technology transfer, arms procurement, European integration, arms control—all these hang together in a way which challenges bureaucratic convenience and defies the reflexes of parochial politicians.

Dassault will be a litmus test of the French attitude

Despite the apparent disarray, the situation is not necessarily discouraging. Over Eureka, the British seem, for the first time, to be responding to an idea, even though it comes from Paris. The French may be beginning to wonder whether the Paris-Bonn axis is less reliable than a triangular grouping which includes the British. The Germans, for understandable reasons, are still groping in the dark. But these are still early days. It is not fanciful to suppose that Star Wars may turn out to be at least as important for its political impact on Europe as for its impact on nuclear doctrine.

Strengthening Conventional Deterrence in Europe.
Proposals for the 1980s ESECS Macmillan 1983.
A program for the 1980 ESECS II Westview Press 1985.

Lombard

Left can talk to left

By Malcolm Rutherford

BRITAIN'S Eurocommunists were rather less successful at last week's special party congress than met the eye. On the face of it, they won a sweeping victory: the hardliners or Stalinists were voted out by a majority of around two to one. Yet the chief prize continues to elude the reformers. That is the control of the party's daily newspaper, the Morning Star.

The paper is owned by a self-governing co-operative known as the Peoples' Press Printing Society. The PPPS is likely to re-assert its control of the paper at a series of meetings to be held around the country early next month.

Does it matter? After all, membership of the British party is now down to below 13,000. The Morning Star is a boring newspaper. More than half of its distribution is in Eastern Europe and the Soviet Union. Could it not be decently confined to oblivion by everyone trying to follow British politics?

Yet the answer is: "Yes, it does matter." Or at least, it matters a bit. The Morning Star is an existing daily newspaper with very modern presses. Well-edited, it could become an extremely interesting paper of the British—perhaps even of the European—left.

One can only conclude that someone is trying to keep it clinically alive to prevent it from falling into the hands of somebody else: namely the Eurocommunists. It is no longer relevant how many people read it, or whether anyone reads it at all. It just has to be kept away from that other Communist journal, the monthly Marxism Today.

The magazine has some special qualities. It is not just that it is, on the whole, well-edited, well laid out and is sold in W. H. Smith. It has another quite considerable achievement.

In the days when the British left seemed down and out, fragmented and sectarian, and with the Labour Party possibly unlikely ever to win another general election, it kept a banner flying. It showed that the left did not have to be boring.

True, it did not do that by certainties. Indeed that was one of its greatest strengths: it acknowledged the extent of the left's defeat and that old slogans would no longer suffice. Even now it is not at all clear where the paper is leading in policy terms: perhaps closer to liberalism than to what is traditionally regarded as communism.

It provided — and provides—a platform for the left to talk to the left, and to outsiders as well. And it recognised something else: the left was not quite as dead as it seemed. Many people had singly moved off into single issue groups such as the women's movement, Child Poverty Action or Shelter. There was a political vitality there to be tapped and explored. What Marxism Today realised was that the British left did not die with the old Labour Party; it merely went off into other directions outside the mainstream of party politics.

There is a trend now for the broad left to start regrouping as it becomes more conceivable that Labour has a chance of returning to office. Mr Ken Livingstone, for instance, claims to have reconciled himself to the leadership of Mr Neil Kinnock, and there are similar signs of a search for Labour unity all over the country. Many of the debates took place in the pages of and at the conferences of Marxism Today.

It is ironic that a small Communist party monthly journal may be seen historically to have played some part in bringing the Labour Party together again.

Two final points: Marxism Today has managed to flourish at a time when the little political magazines have generally been on the decline.

Some Labour Party members think that it is disreuptable because it is Communist. In fact, it is the house magazine of the intelligent left.

It ought to go on growing for at least some of us would like to know where its political thinking goes from here. It might need a little financing from somewhere.

Letters to the Editor

The case for Mansion House

From Mr J. Bartlett

Sir,—The refusal of the Mansion House Square project is yet another tragic failure of a town planning system which despite its original good intent is leading to the premature decay of so many of our cities.

The case for a plaza alone is overwhelming and while the exterior finish of the Mies Van der Rohe tower may not please everyone, there is no way the existing buildings can be regarded as having a significantly better external appearance. Certainly not in operation, and occupiers' cost and comfort.

Palumbo and his backers are prepared to risk substantial sums of money, using their own judgment to provide what is the best type of building to be constructed on the site. This in turn is influenced by the tenants demand and requirements for the type of space they wish to occupy for their entire working day. Significant, and most important, qualified, vested interests therefore.

On the other hand, there is the purely subjective opinion, largely emotive, however apparently well reasoned, of those with no financial or personal involvement of any kind.

One becomes saddened and angry at such a decision. Everyone praises initiative, and attempts to raise the standard of working life for as many as possible, but still decisions such as these are made. The spectre of "Yes, Minister" remains powerful, maintaining a muddled conservatism to any change, however desirable.

James Bartlett.
The Mount,
Batchworth Hill,
Rickmansworth, Herts.

Abolishing the rates

From Mr V. H. Blundell

Sir,—In all the debates on the abolition of the present rating system and its replacement by various alternatives, I have not found any reference to the economic effect of abolishing the present property tax (irrespective of the alternative).

Indeed, I consider that the effects of abolition would be of more economic importance than replacement.

It is well established that the rates depress property prices and rents. The higher the rates, the less the rent or price that can be charged.

It thus follows that the abolition of rates will increase rents and prices of property by the amount of the rates abolished. This was exemplified when agricultural rates were abolished in 1929 and the rents and prices of agricultural land rose immediately.

Is it really the intention of this Government to confer such an enormous benefit on property owners?

V. H. Blundell.
63, Oaklands Avenue,
Hatfield, Herts.

Take a pinch of dry salt

From the Marketing Director of Walkers Crisps

Sir,—I was amused to see that J. R. Phelps (Letters, May 21) has such a low opinion of potato crisps when compared with those eaten in 1929-39. Perhaps he has been eating the wrong make!

The pre-war crisp was almost certainly rancid, hence the "flavour", and if you were lucky you also received in the packet any numbers of small twists of damp salt. If the waxed paper packet was left out of its protective tin for a day or two the crisps were not crisp. Quality varied according to the cook and the season.

Today's Walkers crisp is a Prince, nay a King, in comparison. It is made from real whole fresh potatoes which are taken from carefully controlled stores, in perfect condition, then tenderly peeled, sliced, washed and cooked to perfection in pure vegetable oil. A light dusting of salt or flavouring to enhance the natural flavour and straight into a moisture and air resistant wrap to protect it on its travels. Even now a pack of this superb product, at 13p including VAT, is less than the price of the stamp on this letter's envelope, and the increase since the 1930s is certainly less than the general rate of inflation.

J. R. Cullip.
Walkers Crisps,
Feature Road,
Thurmaston, Leicester.

How many real Communists?

From Mr I. J. Kenna

Sir,—I read your article about the recent congress of the Communist Party of Great Britain with interest. However, on a point of arithmetical accuracy, there are about 30,000 paid up members of the People's Press Printing Society. So the Communist Party, with below 12,000 members, as your correspondent states, cannot account for 90 per cent of PPPS membership, as she also states.

In fact, only about a third of the claimed membership of the Communist Party had paid its dues to date at the time of the 1984-85 re-registration. Many people have probably forgotten by now that they ever were in the party and/or bought shares in the PPPS.

So the forthcoming battle between party and PPPS is more a kind of phantom warfare.

I. J. Kenna.
72 Compton Street, London EC1.

The confusion over trade boards and wages councils

From Professor S. Dennison

Sir,—Lord Kaldor's account (May 15) of wages councils, based on recollections of a lecture by R. H. Tawney, is completely illusory. There were no wages councils in 1910 and it would be surprising if Tawney said there were. The functions and operations of the Trade Boards under the Act of 1909 were as remote from those of the wages councils (established by Ernest Bevin in 1945, not by Winston Churchill in 1909) as were the provisions for old age pensions under another Act of 1909 from the post-war welfare state.

The Trade Boards fixed minimum hourly or piece rates in trades in which the prevailing rates were "exceptionally low." Four were identified, including tailoring, with some women (who predominated) earning as little as 1d an hour. A large proportion of the workers were outworkers, "employed" by middlemen or "putters out" who provided the materials and paid for the work done. They usually operated on a very small scale. Equally, where there were employers' workshops, they were mostly small, with few workers and the employers taking full part in operations. These conditions dominated the London tailoring trades, which Lord Kaldor takes as his only example.

His picture of an "industry" containing "a number of reasonably efficient firms which suffered from the intrusion of a large number of parasitical firms who were highly inefficient but could nevertheless compete with the old-established firms by making use of sweated labour" is fictitious, as is his allegation that the "introduction of minimum wages forced these parasitical firms out of business which in turn enabled the efficient firms to expand." The many investigations and surveys from the 1880s to the 1930s provide no evidence for these allegations, which indeed were largely the invention of the advocates of minimum wage legislation, including (who else?) R. H. Tawney.

One can also ask questions such as how are "efficiency" and "inefficiency" defined and determined, how did the "efficient" firms suffer, in what sense could the "intruders" be termed "parasitical," how many of them went out of business when minimum wages were enforced? The use of the term "parasitical" exemplifies the inadequacy of the account. Its present equivalent, used by the Low Pay Unit, is "cowboy." Lord Kaldor shares its talent for obscuring reality with "weasel" words — thus (final paragraph) determination of wages by market forces becomes "free exploitation of labour."

It seems that Lord Kaldor's purpose is to "demonstrate" thet minimum wages are needed to protect "efficient" firms from wage-cutting. His final paragraph is a variant on the erroneous belief of the Low Pay Unit and the Cambridge Department of Applied Economics that if "efficient" firms are not protected from parasites and cowboys they will not undertake the investment needed to secure higher productivity and employment. The "argument" can, of course, be generalised to embrace all forms of competition including that from abroad.

Mr Kuczynski (same date) appears to have doubts about this as he admits that "it is difficult to argue that all other things being equal, lower pay for particular occupations will actually destroy jobs there," though the Low Pay Unit and Mr Henry Neuberger do not find it so. But again the moral of his letter is unclear. It is obvious that increased employment of low-productivity and presumably lower-paid workers will not generate as much taxable income as an equivalent number of more highly paid workers and therefore provide less to distribute to the "poor" including the unemployed. But does this mean that it is preferable that they should remain unemployed rather than take jobs at wages equivalent to the value of their product? Mr Kuczynski might ponder the fact that the heaviest incidence of unemployment for workers with minimum wages in excess of the value of their product is among the young, including school leavers.

(Professor) S. R. Dennison.
22 Percy Gardens,
Tynemouth, Tyne and Wear.

FINANCIAL TIMES

Tuesday May 28 1985

Terry Byland on Wall Street

Outlook on profits holds key

THE response of Wall Street's equity markets to the much-heralded cut in the Federal Reserve's discount rate and the similar reductions in bank prime rates was looking somewhat disappointing by the end of last week.

The Dow Jones industrial average just managed to hang on to the 1300 mark on which so much faith has been set. But the average fell by 13 points at mid-week, when turnover was disturbingly high. Evidently, there are plenty of nervous investors out there, who are as willing to take profits as they are to push the market any higher.

The lack of enthusiasm is all the more disappointing because lower interest rates are just about the only bullish factor in sight. For the past month, Wall Street has been torn between the two sides of the argument about the pace of the U.S. economy. If the economy is slowing down – and Dr Henry Kaufman of Salomon Bros for one told clients last week that the economy will shortly rebound – then interest rates may come down but so will corporate profits. But from the point of view of the stock and market analysts, can cuts in interest rates outweigh the prospects for poor corporate results in the second quarter – hard on the heels for poor results for the first quarter?

Now that the good news on interest rates is out of the way, and initial predictions of a further cut in discount rate have been discarded, the stock market is left to face the possible bad news on the profits front. Or not, if one believes that the economy is recovering and that the next thing to worry about is the chances of the Fed tightening its grip again.

For the chartists and other technical analysts who base their market views on a close study of the market itself and leave the economic and monetary analysis to others, recent trends are puzzling. The bond market has gone from strength to strength, as it first predicted and then signalled only downward pressures on rates. Yet the stock market has responded only tardily, confounding those who believe in an interest rate-driven equity market.

At Smith Barney, Mr Alan Shaw turns this popular theory on its head with the words; "Stocks need bonds hut bonds don't need stocks." He points out that over the longer term, a weak bond market has been accompanied by a bull market in equities. This trend has been masked by the delay in the equity market's response to shifts in bond market trends, but the underlying picture has remained the same.

Of the recent improvement in the stock market, Smith Barney points to the significance of the interest rate driven stocks which are included in the Standard & Poor's 500 index – 40 financial stocks and 40 utilities. Bank stocks weakened at mid-week on the problems in Argentina, but have been rising strongly since the end of last year. Once again, the banks have been successful in delaying prime rate cuts until they had wrung the last drops of benefit out of the slide in money market rates. And stocks in the utility companies, with their heavy capital borrowing commitments, were the first to herald the downturn in rates.

Thus, argues Smith Barney, the peak in the S&P 500, which preceded that of the Dow industrial average and was widely regarded as an indication of broad strength, may be misleading. Its interest rate stocks reflect, albeit obliquely, the strength of the bond market rather than optimism for industrial equities.

Merrill Lynch, in its investmeot market letter, endorses the significance in the S&P 500 of the financial stocks, and believes that banks will overcome their current bout of profit-taking and continue to do well on continuing prospects of lower interest rates.

But it takes a more optimistic view of corporate profits in the second quarter, in part because it expects an improved trend in the economy. The 0.9 per cent rise in April retail sales it regards as "a small step in the right direction."

Merrill is generally bullish for equities, and believes that the market shows undercurrents of strength which could produce an upward thrust. It puts the spotlight on good quality companies in such fields as drugs, electrical equipment and publishing. An extra bonus would come from the cyclical stocks such as chemicals, paper and forest products, if the dollar resumes a downward trend.

One point can be said with some certainty. If the stock market does not move significantly above the Dow 1300 level – and hold there – in the very near future, then the bears will be back. After all, 1300 is only a number and the market has been gearing up for the breakthrough for a long time now.

AIR RAIDS STEPPED UP AFTER ATTACK ON KUWAITI EMIR

Gulf War truce hopes dashed

BY KATHY EVANS IN TEHRAN

IRAN and Iraq have launched a series of unprecedented air raids on each other's cities as recent hopes for a truce were dashed in the wake of the weekend assassination attempt on the Kuwaiti head of state.

Sheikh Jaber al Ahmed al Sabah narrowly escaped the attack by a suicide car bomber on Saturday in an operation for which responsibility was claimed in Beirut by the shadowy Islamic Jihad movement.

The new violence returns the political situation to that which prevailed before the visit last week to Tehran of Prince Saud al Faisal, the Saudi Foreign Minister. That visit coincided with two bombs in Riyadh for which Islamic Jihad also claimed responsibility.

Nearly 36 hours after the attempt on the Kuwaiti Emir's life Iran issued a statement emphatically denying any involvement in the operation or the Islamic Jihad group. However, parliamentary speaker Hoshemi Rafsanjani referred recently to the support the movements gives to the Islamic republic.

The Tehran media also regularly refer to the 17 convicted terrorists held in Kuwaiti jails as "Moslems" fighting imperialism.

Since the attack on the Emir Iranian officials have been strongly emphasising that it is Iraq which is the source of the Gulf region's problems of internal subversion. Official spokesmen say that Bahrain has recently uncovered an Iraqi Baathist plot to subvet the island's armed forces and 13 Iraqi nationals including some diplomats have been expelled. In the United Arab Emirates another 20 Iraqi nationals have been deported on charges of subversion and espionage, they claim.

The Iranians are clearly anxious that their new lines of communications to the Gulf, particularly via Saudi Arabia, be maintained despite the events in Kuwait. It is not clear, however, whether a planned visit to Riyadh by Mr Ali Akhbar Velyati, the Foreign Minister, will go ahead.

While the rhetoric continues, Tehran residents are trying to count their dead. Two air raids on Sunday night are seid to have left seven dead and 30 injured, but many Iranians and foreigners are sceptical of the figures.

The few remaining western correspondents in Tehran were yesterday forbidden by the war information office from entering the bombed out areas, taking photographs or even naming the location which was hit.

One western diplomat who visited a stricken area said that one bomb alone had destroyed three small apartment buildings where probably at least nine families were living.

Informstion on the western cities which have suffered missile attacks is also scanty. The official media is still referring to the casualties as "martyrs."

As darkness fell last night. Tehran residents were preparing for further strikes. Iran has vowed to retaliate by firing missiles on the Iraqi capital, Baghdad. This pledge has yet to be carried out, either because the Iranians wish to demonstrate that Iraqi is the aggressor or because Iran has a few missiles left.

Only five weeks ago, parliamentary speaker Hoshemi Rafsanjani was boasting, however, that Iran had developed new "push button" missiles which could be launched quickly and accurately.

Iran is being only reluctantly drawn into this battle of the cities as the bombing is proving psychologically demoralising to civilians. Tehran has appealed to the non-aligned movement, the Islamic Conference and the United Nations to help bring an end to the raids.

However, following the two air raids on Sunday night which caused a 90-minute blackout in the capital, Iran today launched air raids on five small towns and villages in Iraq. On Sunday the Iranian air force struck the southern Iraqi town of Al Amarah where industrial and economic targets were hit. No mention was made though of the large air base there.

Iranian oil curbs, Page 3

Gorbachev expected to repeat concern about arms talks

BY JAMES BUXTON IN ROME AND RUPERT CORNWELL IN BONN

SIG BETTINO CRAXI, the Italian Prime Minister, is expected today to become the second senior European politician in two days to be told by Mr Mikhail Gorbachev, the Soviet leader, of his concern about the progress at the Geneva arms talks and his strong opposition to the U.S. Strategic Defence Initiative (SDI).

Yesterday it was the turn of Herr Willy Brandt, chairman of the West German Social Democrat Party (SPD), who took the opportunity of his visit to Moscow to announce that he would not be available to meet Mr George Bush, the U.S. Vice-President, next week. Mr Bush is to visit several European capitals in an attempt to persuade Washington's Nato allies to take part in the star wars programme.

Herr Brandt was given top-level treatment in Moscow, in contrast to the failure of President Ronald Reagan to see him during his state visit to West Germany earlier this month.

The hostility of the Social Democrats to aspects of current U.S. policy, above all over the SDI, has generated heated controversy in West Germany' especially after the party's massive victory a fortnight ago in the North Rhine-Westphalia election.

Plainly out to salvage national political capital from the state election debacle, Chancellor Helmut Kohl, leader of the ruling Christian Democrats, then accused the SPD of "primitive anti-Americanism."

In Moscow yesterday Herr Brandt stressed that throughout his party's 13 years in power until 1982, the Soviet Union "never challenged our loyalty to Nato, nor tried to play us off against the U.S."

The Italian Prime Minister will be the first Western head of government to meet Mr Gorbachev since the funeral in March of his predecessor, Mr Konstantin Chernenko.

Italy, though in practice one of the U.S.'s most faithful European allies, preserves reasonably good relations with the Soviet Union. Sig Craxi's visit will be watched closely by other Western countries interested to learn more about Mr Gorbachev's positions on east-west relations in general and on SDI

Italy has expressed guarded approval for the star wars research programme, which it wants its electronics industry to be involved in. But with the largest communist party in Europe, its primary interest is in fostering better relations between the super-powers.

Kohl and Mitterrand to meet, Page 2

Zanussi to cut nearly 5,000 jobs

By Kevin Done in Stockholm and Alan Friedman in Milan

ZANUSSI, the Italian home appliance maker which was taken over last year by Sweden's Electrolux, has reached a crucial accord with trade unions on a restructuring plan which calls for making 4,848 of Zanussi's 18,882 workers redundant over the next three years.

The agreement was reached at the weekend after weeks of stalemate and more than 70 hours of intensive negotiations which included Electrolux and Zanussi executives, trade union representatives and Italian industry ministry officials.

Today Mr Anders Scharp, managing director of Electrolux, begins talks in Italy on the next pressing issue, a new capital injection of L100bn ($50m) for Zanussi. According to Mr Lennart Ribohn, Electrolux finance director, last year's losses wiped out two thirds of Zanussi's capital, which was boosted to L104bn only five months ago when Electrolux took a 49 per cent stake.

Zanussi's 1984 losses totalled at least L125bn and possibly as much as L140bn.

Electrolux said yesterday that it was planning to convert around two thirds of a L100bn Zanussi bond to which it subscribed as part of its acquisition. Mr Ribohn said the new capital would come from the conversion and no new capital is being sought from the Italian consortium which still holds a 51 per cent stake in Zanussi.

Electrolux expects to convert the rest of the Zanussi bond and obtain a majority stake in 1986 or 1987.

According to Mr Scharp, Zanussi will run up further losses this year, although the company is expected to "break even after financial costs on a monthly hasis by the end of 1985."

The Electrolux restructuring plan calls for, in addition to the redundancies, investment of L341bn in new technology and automation over the next three years.

Death toll mounts in Lebanon

Continued from Page 1

fence minister, Ariel Sharon, who in 1982 sent Israeli troops into Beirut to wipe out the PLO.

Meanwhile, Libya's Co. Moammar Gaddafy expressed support for the Palestinian struggle and warned that control of Lebanon by his Syrian allies – of which be approves – must not come "on the bodies of the Palestinians."

The International Committee of the Red Cross yesterday attempted to evacuate wounded from Bourj Barajneh camp during a brief lull in the fighting but had to call off the operation after only a handful of casualties were taken away in ambulances. It was not immediately clear why the operation was aborted.

Repeated missions by the ICRC to enter the camps over the past few days have been frustrated even though Sabra and Chatila fell to Amal and the Sixth Brigade last week and only pockets of resistance remain. Relief workers believe that many of the wounded have died because of lack of medical attention. Water has been cut off in Sabra and Chatila.

The Bourj Barajneh camp near the airport, the largest and best defended, is still holding out.

Mr Karami, in the most direct condemnation by ths Lebanese Government of the fighting, said: "They are displacing people and then looting their houses and their savings. Is this Jihad (holy war)? They are killing people. They are oppressors in this society."

Hong Kong handover

Continued from Page 1

as he arrived in the Portuguese territory after a week of talks in Peking, Shanghai and Guangzhou (Canton). His whistle-stop one-day tour was the first to Macao by a Portuguese head of state since it came under Portuguese administration almost 430 years ago.

President Eanes emphasised over the day that Macao was too small a place for political squabbling inside the Portuguese community. The feud between the present governor and local political figures came to a climax in February last year when local demands for a dilution of the governor's sweeping powers brought the legislative assembly to a standstill.

That prompted Governor Almeida e Costa to dissolve the body, introduce sweeping electoral reforms and call fresh elections.

It took direct intervention by President Eanes, and discreet intermediation by Peking, to devise a face-saving truce.

Yesterday's events suggest the President had concluded that unity inside Macao's Portuguese community was impossible while the governor remained in office. He would in any case have retired at the end of the year, coinciding with the retirement of President Eanes himself.

The Portuguese president told local political leaders powers given to the governor would not be diluted – even though dispute on this issue was at the heart of the confrontation leading to dissolution of the legislative assembly last year.

He made a special point of altering a busy schedule to talk to members of a newly formed political group, telling them he would accept no action "that would divide Portuguese people where they need to be united."

Macao's tiny Portuguese community numbers about 15,000, out of a total population of about 400,000.

Texas Instruments head quits

BY TERRY DODSWORTH IN NEW YORK

MR FRED BUCY, the president and chief executive officer of Texas Instruments, has taken early retirement at the age of only 56 in a surprise move which is widely seen as a forced departure after a series of heavy setbacks for the Dallas-based electronics group.

The company is replacing Mr Bucy with Mr Jerry Junkins, 47 who as executive vice-president of data systems, government electronics and industrial controls, has been heading one of its most consistently successful divisions.

Over the last three years, Texas Instruments has seen its reputation as a high-flying pioneer of the electronies industry tarnished by a series of problems.

Famed as the main developer of the pocket calculator and the integrated circuit, it came unstuck in its attempt to break into the home and business computer markets with machines that were either too expensive or not well enough adapted to their markets. The failures forced it into heavy write-offs of $600m in 1983 and a final loss for the year of $145m.

Mr Mark Shepherd, 62, who had been expected to retire before Mr Bucy, is to remain as chairman.

Lear Fan will not repay UK

Continued from Page 1

project and keeping the Government informed.

It will also check whether the precautionary guidelines, laid down after the De Lorean affair, were observed, particularly whether adequate assessments of feasibility were made before each stage of the project was approved.

The Northern Ireland Development Board holds some rights to the design of the aircraft hnt these are due to expire later this year. MPs are concerned that these should not be relinquished only to have the aircraft manufactured in the U.S. at a later stage.

World Weather

		°C	°F			°C	°F			°C	°F			°C	°F
Ajaccio	S	25	77	Dubrovnik	-	—	—	Malaga	F	23	73	Salzburg	F	27	81
Akrotiri	S	28	82	Faro	F	18	88	Malta	S	24	75	Seoul	F	27	81
Algiers	F	23	73	Florence	F	30	86	Manila	S	34	93	Singapore	F	30	86
Amsterdam	S	27	81	Frankfurt	S	27	81	Miami	C	29	84	Stockholm	S	25	77
Athens	S	28	82	Funchal	F	19	66	Milan	S	26	79	Strasbourg	F	27	81
Bahrain	S	35	95	Geneva	F	24	75	Moscow	S	21	70	Sydney	S	19	66
Bangkok	S	33	91	Gibraltar	F	23	73	Munich	S	27	81	Taipei	S	30	86
Barcelona	F	21	70	Guernsey	R	12	54	Nairobi	F	22	72	Tangier	F	20	68
Beirut	S	27	81	Helsinki	S	24	75	Naples	F	29	84	Tehran	-	—	—
Belgrade	F	25	77	H. Kong	F	30	86	New Delhi	S	42	108	Tel Aviv	S	34	93
Berlin	S	28	82	Innsbruck	F	27	81	New York	C	31	88	Tenerife	-	—	—
Biarritz	F	23	73	Inverness	F	18	64	Nice	F	23	73	Tokyo	S	25	77
Blackpool	C	17	63	Istanbul	F	23	73	Oporto	F	16	61	Toronto	R	18	64
Bordeaux	F	22	72	Jersey	F	13	55	Oslo	S	22	72	Tunis	S	26	79
Brussels	S	25	77	Jo'burg	-	—	—	Paris	R	20	68	Valencia	S	25	77
Budapest	F	25	77	Las Palmas	F	22	72	Prague	S	25	77	Venice	S	26	79
B. Aires	C	18	68	Lima	C	19	66	Reykjavik	C	5	41	Vienna	S	26	79
Cairo	C	38	100	Lisbon	F	17	63	Rio de J'o	C	30	86	Warsaw	S	26	79
Cape Town	R	15	59	Locarno	F	21	70	Rome	S	26	79	Zurich	S	26	79
Caracas	C	27	81	London	C	16	61								
Casablanca	F	20	68	Los Angeles	C	22	72								
Copenhagen	F	24	75	Luxembourg	S	23	73								
Corfu	-	—	—	Madrid	F	18	64								
Dublin	C	13	55	Majorca	C	17	63								

Readings at mid-day yesterday:

C-Cloudy D-Drizzle F-Fair Fg-Fog R-Rain S-Sun Sl-Sleet Sn-Snow T-Thunder

Sinclair seeks finance

Continued from Page 1

Sinclair Research has recently won contracts from American Express and Sears in the U.S. and Dixons in the UK for substantial orders for the TV's which sell at £100 in Britain. The company is also having discussions with one Far Eastern and the European company about licensing production of the TVs.

The second hope for Sinclair Research is the QL computer, which had a disastrous launch just over a year ago. The problems surrounding the QL have finally been ironed out although the company has only sold 60,000 since the launch. In January 1984 Sir Clive was talking about producing 100,000 QLs a month by now.

The QL is just being launched in the U.S. by mail order and is being aimed specifically at the computer hobbyist market. A sign that it may sell well was a review in an American magazine which produced more than 20,000 inquiries.

Sinclair's main product-line is still the Spectrum computer, the price of which was cut sharply after Christmas. Although the Spectrum is growing old in computer terms there is an enormous amount of software available for it which should give it further life and help in export markets.

THE LEX COLUMN

Special offers in the bazaar

Two current fashions in the corporate finance boutique – the leveraged buyout and the consortium bid – are being shown off in high-relief, though not necessarily to best advantages, in the battle for control of Debenhams. True, the long-awaited offer from Burton is not exactly a consortium bid, though Habitat/Mothercare has an option to take 20 per cent of the equity later on if it still seems a good idea. And on the other side of the walk-way, the Debenhams management has yet to unveil the latest in outsize leveraged buyouts – though Mr Thornton's promise to rustle up £600m of finance has at worst served to keep Debenham's share price boiling while the Burton bid emerged.

Flexibility

In the best traditions of the financial High Street, the flexi-consortium offer and the prospect of a buyout appear to have expanded the range of investor choice. The loosely-jointed partnership between Burton's Mr Halpern and Habitat's Sir Terence Conran seems to offer institutions a chance to put two managements they admire into a business where the returns over the past 10 years have been pretty uninspiring. Yet the Thornton team has also won its adherents, and if a majority of the existing shareholders seem inclined to sell out on the Burton terms, there may well be enough support – from funds with an eye on property values, no doubt – to allow Mr Thornton to make a higher offer. If either faction ends up owning Debenhams, the highly-geared financial engineering behind that victory will leave the winner taking on higher risks than shareholders in Debenhams have ever shouldered before. And a buyer will be forced to look for greater returns than anyone has extracted from middle-of-the-road UK department store property in years.

Burton's offer has the definite merit of having skirted round the pitfalls of most consortium efforts while gaining some of the same advantages. For one thing, although the offer has brought in institutions at the outset – as underwriters to the cash underpinning — they remain shareholders in an enlarged Burton rather than prospective equity partners in Debenhams; and in the first 10 minutes they had already seen a more than decent return on their investment.

Similarly, the option-relationship with Habitat offers Burton the chance to recoup some of its initial outlay and hrings in a very useful ally, to supply the knowledge of houseware merchandising without which Burton would struggle to run a full-range department store. And for Habitat, the freedom not to put in any equity – beyond its exposure in almost 1m square feet of selling space – gives it the only example of cost-free gearing to be seen anywhere in the whole affair. Above all its other attractions, the loose structure of this partnership has enabled the offer to be couched without creating one of those new corporate vehicles named after obscure corners of the City – Bassishaw, Paternoster – in order actually to make the bid.

Like Woolworth and UDS, the subjects of those earlier essays in mounting a collaborative assault on under-exploited retailing assets, Debenhams has been scrutinised by merchant banks over the years. The difference is that its properties have always looked harder to liquidate if things went wrong, while the shares have tended to trade at too little discount to the book value of their assets to leave much margin for error. For Burton, dealing in paper that is overflowing with goodwill – well over 300p per share at current levels – these problems must seem less constraining.

They remain pretty close to the surface, however; it would be naive to imagine that the transformation of Debenhams' stores into exotic Japanese or American style trading spaces can be accomplished without using some of the underlying property value to generate the necessary cash. And the claim that Burton-Habitat can add value to the properties by trading in them – rather than living off the implicit rental – can surely be made good only while a flood-tide of consumer spending rolls on. A few months of mild recession, and it is easy enough to see Sir Terence failing to exercise his option, while the underwriting institutions leave Burton shares for dead.

Mr Thornton's less radically ambitious trading plans will presumably require less rapid outflows of cash. But the debt that would appear to follow from an attempt to top the Burton offer is daunting. Sale and leaseback on the freehold properties, perhaps helped by the sale of Welbeck Finance, might bring the capital gearing down to an initially bearable level, but the prospect of rent reviews bearing down on the retail margin over succeeding years is anything but attractive.

The catch facing investing institutions is that if they try to take out their underlying security in the form of freeholds, they risk hobbling the post-buyout profit and loss account; if they leave this equity in the balance sheet, the buyout may never happen. For all that, the market seems to be expecting a deal to be assembled – or a counter offer from somewhere else; on Friday the Debenhams share price continued rising, just as the value of Burton's offer was falling. Whatever the gap measures, at nearly £50m it is not the probability of Debenhams remaining independent.

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SECTION II – COMPANIES AND MARKETS

FINANCIAL TIMES

Tuesday May 28 1985

UK options differ on the margins

BY ALEX NICOLL IN LONDON

THE DEVELOPING battle for options business between two London exchanges will offer more than a simple choice between competing contracts and trading floors. The London Stock Exchange and the London International Financial Futures Exchange (Liffe) will have radically differing systems for determining margin payments.

The stock exchange's sterling/dollar option, after seven trading days, is already showing healthy volume increases which indicate that the rush to get going ahead of Liffe was well-judged. Liffe's sterling/dollar option, twice the size at £25,000, will begin on June 27 along with an option on its existing Eurodollar futures contract.

The margin systems chosen by the two exchanges reflect their respective origins. The stock exchange, partly because speed was all-important, simply employed for currency options the method already used for its now-flourishing equity options. It may make adjustments later, especially as it will be useful to have as near identical e system as possible to that of the Philadelphia Stock Exchange when their contracts become interchangeable.

The two stock exchanges already have broadly similar methods. In London, buyers of options pay the full premium, with no margining; writers (sellers) who are market-makers put up 130 per cent of tha daily closing premium value of their net open positions, while other writers put up 10 per cent of the face value of the contract plus or minus the amount by which it is in or out of the money. (An out-of-the-money option is a call of which the exercise price is above current market value, or a put whose exercise price is below market value.)

When the London and Philadelphia contracts become interchangeable – scheduled for autumn – open positions on both exchanges will be netted out in margin calculation.

Liffe is taking a different approach. It has developed a sophisticated system containing three important innovations: options and futures positions will be offset against each other in margin calculation; buyers of options will put up margin payments instead of the full premium; and margins will be "delta" based – determined according to risk factors calculated and published daily.

Liffe, conscious of its roots as a futures market, is linking futures and options margins in order to provide e cash-efficient way of using one type of instrument to offset risks in the other – and thus to enhance market liquidity, which Liffe has set as its prime goal.

There would seem to be few arguments against this. Nor sbould the Liffe system be too confusing once market participants are accustomed to it. "I would defy anyone to say that it is too complicated," says Mr Michael Jenkins, chief executive.

Doubts have been raised, however, about the "robustness" of the Liffe system. Critics say that margining of buyers could encourage "pyramiding" – using margin account credits created by option price rises to buy more options. This could make buyers vulnerable to sharp price swings. In addition, the delta input could take inadequate account of the potential for sudden market volatility, and similarly leave traders thinly margined.

Mr Jenkins counters that "pyramiding" is possible in any leveraged product, such as futures, and that the "implied volatility" incorporated in delta-based margining is sufficieot.

Nevertheless, there may be two drawbacks. Because the seller of an option on Liffe is oot getting the full premium immediately, he is likely to set a higher price. More generally, U.S. regulators have yet to approve margining for option buyers.

The widespread market view is that only one currency options market will flourish in Londoo – though it is worth remembering that Liffe will have options on Eurodollar futures and long gilt futures, and no doubt eventually other contracts, as well as on currencies.

INTERNATIONAL BONDS

Low yield holes EEC floater

BY PETER MONTAGNON, EUROMARKETS CORRESPONDENT, IN LONDON

THE FLOATING-RATE note market got itself in e real tangle last week over the $1.8bn five-year issue for the EEC.

Launched on Wednesday through Credit Suisse First Boston, the notes, which bear a margin nf 1/16 point over the six-month London interbank bid rate for Eurodollar deposits, never managed to trade above their net selling price to managers of 99.925.

The problem was that the yield was too low for banks which remain the main buyers of floating-rate notes. Though there was evidence of demand from retail and institutional investors prepared to treat the paper as a high-grade liquid money market instrument, it only really showed et levels way below the offer price. For these buyers an amount of $1.8bn is also a very big one to swallow.

The result was that eveo on Friday the notes were still trading at e discount of some 20 points. But that is something which could put both issue managers and potential future borrowers in a quandary. For it suggests that after a loog period of seemingly inexorable decline in floater yields there may after all be a floor.

If that is so, then one of two things will have to happen to keep the market going. Either borrowers will have to brace themselves for the indignity of offering paper on terms that until now would have seemed excessively generous or issue managers will have to decide whether to continue cutting their own throats by launching loss-leader bonds in the hope of more juicy ancillary business to come.

This was one rationale for the EEC issue, but it could turn out to be illusory fnr a borrower which offers relatively little banking business and last year raised only $704m in the bond market compared with the World Bank's $5.5bn.

As if to underline the point that the floater market now needs to take stock of itself, last week also saw another difficult issue in the form of a £150m perpetual floater from Standard Chartered which met very little demand indeed. Here the problem was not just the low 3/16 per cent margin and large size – there is an overhang of another £150m on tap.

The issue also ran into problems because buyers of sterling floaters are traditionally part of the UK banking market itself, for example brancbes nf foreign banks in London, and they are doubly sensitive to Bank of England misgivings about cross-holdings in the banking system of subordinated notes which count as capital.

By contrast fixed-rate markets closed last week with a generally firm undertone, although trading was very subdued because of the annual meeting of the Association of International Bond Dealers in Helsinki.

The star performer was the DM 150m issue for the Bank nf China which was still trading very close to par on Friday night, but there were also success stories in other sectors too. The Ecu 40m issue for the Bank of Tokyo was very well received, while ICI's £75m Eurosterling issue sold steadily, despite the fact that this issue also carries a £50m tap which could make it the largest fixed-rate Eurosterling issue ever.

On Friday it was trading at a discount of 1¾ points, well within its 2¼-point fees.

After a slow start BP's 10½ per cent partly-paid issue picked up later in the week as investors concentrated oo its guaranteed average 5.7 year life.

Recent International bond issues, Page 22

Bond dealers approve rule reforms

BY MAGGIE URRY, RECENTLY IN HELSINKI

THE BOARD of the Association of International Bond Dealers received an overwhelming vote of approval for its proposed reform package at the annual meeting in Helsinki last week.

As a result of the vote the board will have powers to make rules, subject to a veto of the AGM. The meeting will become a forum for strategic discussions rather than detailed rule-making.

The election of board members will also be changed to a system of annual elections for one-third of the 15-strong body, each member serving a three-year term.

Five candidates would be selected each year by a nomination committee. This would enable the board to attract key people in the industry, according to M René Jaquet, a current board member. He said that the system of self-presentation for electioo was outdated and embarrassing and a "hephazard" method. Candidates not selected by the nomination committee would still be eble to put themselves forward.

The AIBD chairman Mr Damieo Wigny said that the reforms were essential to the cootinued health and progress of the association and would allow the AIBD a self-regulatory role.

Detailed proposals will be put to an extraordinary general meeting in Londoo in December and the new system will take effect from the oext AGM in May 1986.

Meanwhile the board stood for re-election for a ooe year term. Two members lost their places – Mr Koji Nakamura of Mitsubishi Finance (Hong Kong) and Mr Ake Rydberg of First Interstate. They were replaced by Mr David Watkins of Goldman Sachs and Mr William Wong of Indosuez Asia.

Earlier the AGM bad voted to amend Rule 181 which covers deals done at prices significantly different to prevailing market prices. The changes would require that in such a case the contract note would clearly identify the deal as a special transaction.

Proposing the amendmeot, M Tom Beacham, chairman of the market practices committee, said that the change was a response to an unresolved dispute between members and allegations of fraud. This had arisen from the UBS/Bear Stearns scandal which had rocked the Eurobond market in the summer of 1984.

Mr Beacham said that the amendment showed that the AIBD was oot prepared to condone such conduct. "We must be seen to regulate ourselves – paricularly if we do oot want others to do it for us," he added.

The meeting also agreed to increase the annual subscription from SwFr 1,000 to SwFr 1,250.

EUROMARKET TURNOVER
Turnover ($m)

Primary Market	Straights	Conv	FRN	Other
U.S.$	980.6	8.1	2,157.3	62.5
Prev	2,234.0	63.2	2,109.8	99.0
Other	348.0	1.2	8.4	0.4
Prev	1,020.6	6.1	391.0	2.4
Secondary Market				
U.S.$	21,664.0	750.8	10,802.0	1,581.5
Prev	14,780.6	584.1	10,082.4	1,326.4
Other	3,171.5	162.2	367.9	1,144.2
Prev	3,087.9	104.9	554.9	1,042.5

	Cedel	Euroclear	Total
U.S.$	12,212.1	25,774.8	37,986.9
Prev	9,434.7	21,824.9	31,259.6
Other	2,928.5	2,275.5	5,204.0
Prev	3,261.7	2,948.7	6,210.4

Week to May 23, 1985 — Source: AIBD

Finer terms set for $600m Korean loan

BY OUR EUROMARKETS CORRESPONDENT

KOREA'S Development Bank has formally mandated 15 banks to raise a $600m, eight-year credit in the Euromarkets.

Industrial Bank of Japan will be general agent for the deal which bears a margin over Eurodollar rates of ⅜ point for the first four years rising to ½ point thereafter.

Alternatively lenders may npt for a margin over U.S. prime retes of 10 basis points with a ceiling set at 110 points over certificate of deposit rates.

These terms are slightly finer than those on the last major Korean loan which bore a ⅜ point margin only for the first three years of its life and e CD cap of 115 points. But bankers in Hong Kong expect syndication to be smooth.

One reason is that the Asian loan market is still rather starved of business and oo other major deals are in prospect et the moment. Malaysia has told its bankers it does not currently want to follow Indonesie's example by launching a Euronote facility and India has still to seek bids for a long-awaited $440m financing for Indian Airlines.

But another factor is that very few borrowers indeed now offer banks the opportunity to lend at a margin over the lucrative U.S. prime rate. That coupled with the relatively high Libor margins has to appeal in a market that is now accustomed to microscopic returns.

Certainly it is a recipe that has paid off for East Germany whose $150m credit (⅝ point over Eurocurrency rates or ⅜ point over prime) has been very well received, collecting $250m in syndication by last Friday. The deal is certain to be increased although the final amount remains undecided. A similar situation appbes on another Comecon credit, the $200m loan for the Soviet foreign trade bank. This deal hears finer margins and no prime option but is still heavily oversubscribed.

The launch last week of a Eurocommercial paper programme for Canada's Export Development Corporatinn has meanwhile revealed considerable investor demand. Though the amount of paper so far sold under the programme is not being revealed the price fetched was more than ¼ point below Libid. For small retail investors this may still be higber than the rate they could obtain on a time deposit from a bank, while for nthers it still represents e mark-up no the return available from U.S. Treasury bills.

Signs of further development of a Eurocommercial paper market are coming from plans by ITT Financial to leunch e $250m programme in Europe through Bankers Trust, Salomon Brothers and Swiss Bank Corporatinn International. This programme is, however, still at the documentation stage and it will be some time before it is actually launched.

On the Latin American front, Colombia remained locked in discussion with its main creditors last week on terms of its forthcoming $983m financing. Though Colombia is one nf only two countries in the region that has not rescheduled its debts a number of issues remain to be resolved before the deal can go ahead. These include not only pricing, but also worries about the debt of ailing private sector concerns as well as the legal question of who the formal borrower will actually be.

Colombia, which has a long tradition of insisting that its borrowing be executed under its own law, is likely to adopt New York law for this transaction.

Of the proceeds, $515m is to be made available this year to cover investment needs in the coal, oil and hydroelectric sectors as well as to provide $100m in fresh capital for the local banking system. The remainder will be disbursed in 1986 and include $100m in co-financing of a World Bank trade promotion loan.

INTERNATIONAL CAPITAL MARKETS

U.S. MONEY AND CREDIT

Rally survives profit-taking and warnings

U.S. BOND prices moved higher again last week as short-term interest rates dropped following the Federal Reserve Board discount rate cut.

The extended rally survived a bout of profit-taking in mid-week and sharp disagreements among Wall Street's senior economists over the likely course of Fed policy in the coming months.

The most stark warning came from Dr Henry Kaufman, Salomon Brothers' chief economist. He said that an economic rebound was already under way and would be more visible by mid-year. Accordingly, he cautioned that the two-month-old bond market rally had almost run its course.

While most senior economists agree that the Fed will now move with added caution in its implementation of monetary policy, Dr Kaufman's bearish outlook is far from universal.

For example, Mr Philip Braverman of Briggs Schaedle predicted that the Fed "is likely to ease again further, if it is not already in the process of doing so." He believes the Fed

U.S. MONEY MARKET RATES (%)

	Last Friday	1 week ago	4 wks ago	12-month High	12-month Low
Fed Funds (weekly average)	7.68	8.12	8.14	11.77	7.68
Three-month Treasury bills	7.17	7.41	7.80	10.77	7.17
Six-month Treasury bills	7.38	7.60	8.03	10.83	7.38
Three-month prime CDs	7.65	7.96	8.20	11.90	7.65
30-day Commercial Paper	7.50	7.85	8.05	11.38	7.45
90-day Commercial Paper	7.63	8.06	8.15	11.40	7.50

U.S. BOND PRICES AND YIELDS (%)

	Last Friday	Change on week	Yield	1 week ago	4 wks ago
Seven-year Treasury	106½	+ ½	10.40	10.51	11.22
20-year Treasury	108⅛	+ ⅜	10.96	11.02	11.63
30-year Treasury	103⅝	+ ⅞	10.84	10.91	11.41
New 10-year "A" Financial	N/A	+ ¾	11.25	11.38	11.88
New "AA" Long utility	N/A	+ 3	11.63	12.00	12.50
New "AA" Long Industrial	N/A	+ 2⅛	11.50	11.75	12.38

Source: Salomon Bros (estimates).

Money Supply: In the week ended May 13 M1 rose by $100m to $577.8bn

is aiming for a 7½ funds rate and that another discount rate cut is likely by late June.

Wall Street's confusion over the Fed's next move mainly reflects two key factors. First, disagreement over the current state of the U.S. economy and the extent of a rebound in activity in the second quarter. Second, the difficulty of "reading" the current banking and monetary figures.

Because of special borrowing needs of troubled financial institutions — especially the Maryland thrifts — the current high $1.29bn level of discount window borrowings is a poor indicator of Fed intentions. Similarly the monetary aggregates have been distorted by special seasonal and technical factors.

The markets are therefore focusing on the overnight funds rate—which last week hovered around the 7.70 per cent level—as a key indicator of Fed intentions.

The release of the report of the March Federal Open Market Committee (FOMC) meeting late on Friday, did nothing to help resolve the dilemma. The report, described by one senior economist as "a masterpiece in justifying a decision to delay a decision," showed that the FOMC members voted unanimously then to hold monetary policy basically unchanged.

Wall Street is hoping therefore that Fed open market operations over the next few weeks following the latest FOMC meeting will give a clearer indication of the monetary authorities' current policy stance.

In the meantime, with last week's further downward revision in first quarter GNP growth still fresh, the markets will also focus on the latest signals from the real economy and in particular on the April leading economic indicators number due out on Thursday.

In the credit markets investors will return from the extended holiday week-end today facing the auction of $8bn in five-year notes tomorrow. The offering includes a $1bn package of foreign-targetted notes, the first such offering since November last year.

The auction could provide a real test of the healthy bond market retail interest which has emerged in recent weeks.

Last week the two-year note auction brought investors an average yield of 9.13 per cent. Treasury bond prices posted gains of between ½ and ¾ of a point on the week after bouncing back from a midweek lull.

Following the discount rate cut T-bill rates fell by between 15 and 42 basis points but in the foreign exchange markets the dollar shrugged off the lower rates and posted further gains against other currencies.

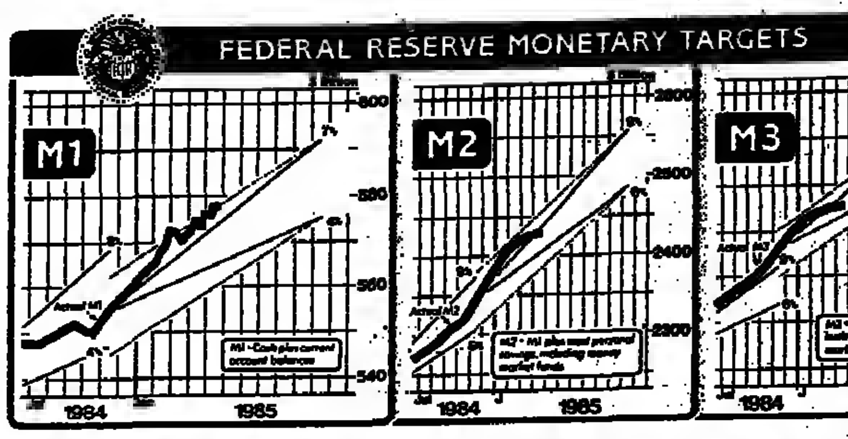
The rally in the government sector spilled over once again into corporate bond prices and spurred another bumper crop of new issues totalling around $2.2bn last week, bringing the total so far this year to over $26.3bn.

Reflecting the swing back to domestic issues, corporate borrowing in the U.S. continues to outpace borrowing abroad. According to Salomon Brothers' figures domestic issues have raised $5.5bn so far in May compared to $1.1bn overseas.

Among the major corporate new issues last week, Associated Dry Goods raised $100m through 10⅞ per cent 10-year notes priced at par, Shearson Lehman Brothers sold $100m of 20-year 11⅞ per cent bonds at par and Delta Airlines sold $120m of three-year 9[illegible] per cent extendable notes.

Other issues included a $200m offering of 12-year floating rate notes by Irving Bank, which sold at par and a $350m offering of 10-year 13⅝ per cent notes priced to yield 13¾ per cent from Stone Container.

Paul Taylor



UK GILTS

Money supply data switch raises eyebrows

THE money supply may in future months at least appear to be coming under firmer control. But the consensus among brokers is that last week's Treasury decision to alter the presentation of the statistics will have little impact on what they expect to be a relatively disappointing figure for May.

The move, announced rather curiously in the Treasury's Economic Progress Report, means that in future the Government will emphasise the year-on-year growth rates at any particular point in the target periods of sterling M3 and M0.

The annualised growth rates since the February start to the target period will be dropped from the Bank of England's monthly Press release.

The Treasury's argument, which incidentally gains support among most economists and brokers, is that the old method gave too much weight to erratic figures in the early part of the target period. The year-on-year approach gives a much more reliable picture of monetary growth throughout the year.

If the theoretical argument was widely accepted, however, the timing and presentation of the announcement caused more than a few raised eyebrows in the gilt-edged market.

The background to the decision has been a persistent Treasury campaign — often without the support of the Bank—to wean the markets away from putting too much emphasis on sterling M3.

Brokers wondered how much of a coincidence it was that the change followed a month when sterling M3 surged by 2.75 per cent, leaving the annualised growth rate of the aggregate hopelessly outside its 5 to 9 per cent target range.

The year-on-year comparison will also be affected by the growth pattern a year earlier. The June figure, for example, will benefit from the fact that the 2 per cent increase in sterling M3 in the same 1984 month will drop out of the annual growth rate.

In contrast, the July figure is likely to be distorted upwards because of the fall in sterling M3 a year earlier, while later in the autumn the impact will once again become favourable.

It will still be possible, however, to see the shorter-term trends in sterling M3 growth as the Bank will continue to publish three- and six-month growth rates for both monetary aggregates.

Some brokers believe that the longer-term implications of the change, taken with the Treasury's sharper focus on the exchange rate and M0, could be favourable for gilt-edged.

Simon and Coates argues that if the rapid growth in bank lending which has pushed up sterling M3 is seen as a structural phenomenon rather than a harbinger of future inflation, the authorities will be less concerned to offset it through "overfunding" in the gilt-edged market.

That process is anyway becoming untenable, the broker says, because of the growing size of the bill mountain and the distortions to bank lending caused by corporate arbitrage.

Roger Bottle of Capel-Cure Myers suggests, however, that while attempts to downgrade sterling M3 still further remain an option, it is not one that the authorities would readily take and if they did the markets would not receive it lightly.

The more immediate focus of the gilt-edged market is on the money supply figures for banking in May, due out next Tuesday. Here the change in presentation is likely to have little impact on the figures.

And while the immediate reaction to last month's figure for sterling M3 was that it would be followed by a fall in the aggregate in May the general consensus now is that it may have grown by around a ½ per cent.

That would leave it well outside its target range on a year-on-year basis and, the brokers believe, it would rule out any significant cut in base rates for a further month.

On that basis the gilt-edged market would have to continue to rely on the foreign buying which has underpinned prices for the past few weeks.

Philip Stephens

FT/AIBD INTERNATIONAL BOND SERVICE

U.S. DOLLAR STRAIGHTS	Issued	Price	Chg. on week	Yield
AHFC O/S Fin 11⅛ 94	100	103	+0⅛	11.17
AIOC 11 89	75	101⅛	+0⅛	10.37
AIOC 11⅞ 90	100	101⅛	0	11.35
Amer Savings 12 89	125	101⅛	+0⅛	11.39
Amer Savings 12⅛ 89	100	102⅜	+0⅛	11.39
Asian Dev Bk 11⅛ 90	100	102⅜	+0⅛	11.22
Australia 11⅛ 90	100	103⅞	+0⅛	10.25
Sanwa Bank 11⅞ 92	150	102⅜	+0⅛	11.31
Saskatchewan 10⅜ 92	100	99⅜	+1	10.92
Saskatchewan 10⅜ 90	125	101⅛	+0⅞	10.25
Saskatchewan 11⅞ 89	100	104⅜	+0⅛	10.56
Saskatchewan 18 92	150	118⅜	+1⅛	11.08
Saskatchewan 18 89	125	116⅛	+0⅜	10.60
Scot Intl Fin 14⅜ 96	50	109½	−0	12.60
Seam O/S Fin 98	500	24	+0⅛	11.46
Sears Roebuck 10½ 91	150	99½	+0⅛	10.48

	Issued	Price	Chg. on week	Yield
Pru Rlty Secs 12⅛ 95	546	105⅜	+1⅛	11.13
Quebec Prov 12⅜ 94	150	105⅞	+1⅛	11.21
Queensland Gvt 11⅜ 99	100	102⅞	+0⅛	10.65
OSC 12⅛ 60	100	104	−0⅛	11.55
Rural Bk Aust 12 91	50	101	+0⅛	11.72

CONVERTIBLE BONDS	Issued	Price	Chg. on week	Prem.
Murata Mfg 3½ 00	100	107		
Nippon Oil 3⅛ 99	50	86⅞		
Ono Pharm 3⅜ 96	50	102½		
Soc Gen Surv 4½ 94	51	97⅛		
Sumitomo Corp 2⅞ 99	70	102⅜		
Texaco Capital 11⅞ 94	1bn	105⅜		
Texaco Capital 11⅛ 94	500	106½		
Tsugami Corp 3⅛ 00	20	78		
Yamaichi Sec 3⅛ 95	20	123½		
Fujitsu 3 99	160	87	−1⅛	17.05
Intec Inc 3 99	50	70⅛	+1⅛	−1.88
Kumagai Gumi 3½ 00	80	100⅞	−2½	0.16
LASMO 9⅛ 89	45	87¾	+0½	−16.98
Moet-Hennessy 7 99	50	102⅞	+0⅛	0.82

WARRANTS	Expiry date	Price	Chg. on week	Prem.
Inc In Inds 10⅞ 91	1/12/88	67½	+2½	0.66
McDonalds F 11⅛ 94	5/1/89	25⅛	−1⅛	6.83
Oester Lnbk 13½ 89	9/8/87	66⅛	+9⅛	−2.46
Texaco Cap 17⅞ 92	1/9/87	61	+5	3.85
Xerox 13⅛ 87	15/8/85	53½	+7	−8.77

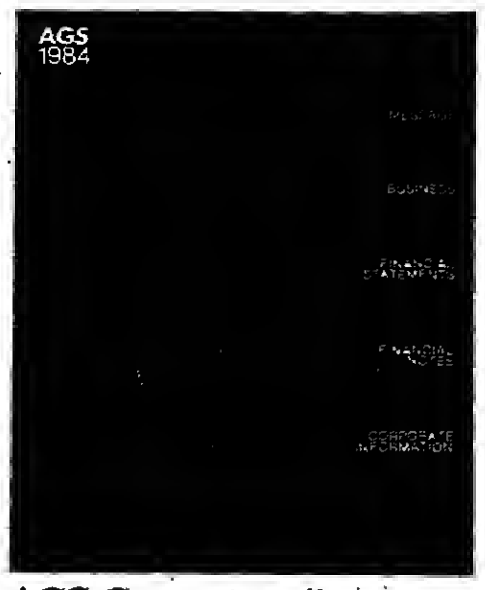
STRAIGHT BONDS: Yield to redemption of the mid-price. Amount issued is expressed in millions of currency units except for yen bonds, where it is in billions.
FLOATING RATE NOTES: U.S. dollars unless indicated. Margin above six-month offered rate (‡ three-month; § above mean rate) for U.S. dollars. C.cpn=current coupon.
CONVERTIBLE BONDS: U.S. dollars unless indicated. Prem=percentage premium of the current effective price of buying shares via the bond over the most recent share price.
WARRANTS: Equity warrant prem=exercise premium over current share price. Bond warrant as yld=exercise yield at current warrant price.
* Perpetual.

 Closing prices on May 24.

These 12 Annual Reports are designed to keep you informed on Major North American Companies.

Part 2 will be featured on May 29th.

North American Companies Investors Update 1



AGS Computers, Inc.

AGS Computers, Inc. (New York Stock Exchange: AGS) provides automation solutions to the telecommunications, *finance and* computer industries. A leader in each of its two business niches, AGS is a leading software company serving the commercial systems development market, in addition to being the largest distributor of microcomputers and related peripheral equipment in the United States. Headquartered in Mountainside, New Jersey, with more than 50 additional locations around the world. Revenues for 1984: $221,631,000.

Allied Corporation

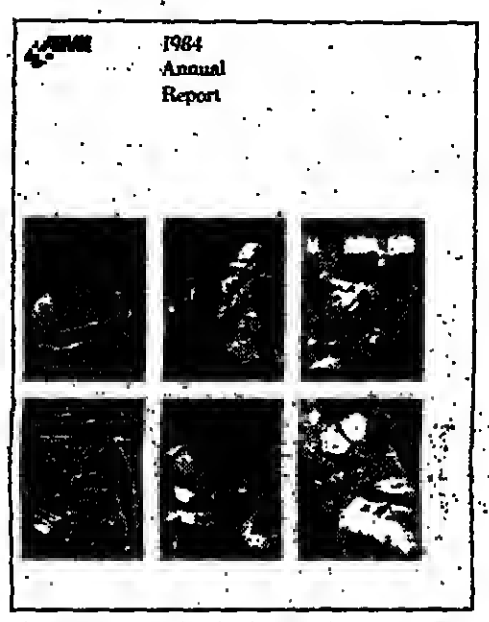
Allied Corporation was formed in 1920 and is one of the thirty *companies in the Dow Jones Industrial Average.* Allied is a diversified manufacturer of products which are sold in a range of industries worldwide. Many of Allied's businesses are leaders in the markets that they serve. The Company's businesses are grouped in five sectors – Aerospace, Automotive, Chemical, Industrial and Technology, and Oil and Gas.

AMCA International

AMCA International is engaged worldwide in designing, engineering, manufacturing, *marketing, installing* and *financing* a broad range of construction equipment, engineering and construction services, industrial products, and steel products and services. AMCA's common stock is traded on the New York, Toronto and Montreal Stock Exchanges. Ticker symbol AIL. The 103-year-old company's target for 1990: sales *exceeding* $5 billion, net *operating income* at least $270 *million*, despite effects of world recession in 1983-84.

American Express

American Express reported record earnings of $610 million for 1984, an 18% increase over 1983. Its businesses include Charge Cards, Travellers Cheques, travel, international and investment banking, brokerage, personal financial planning and insurance. Operating in 130 countries, it is targeting select segments of the growing financial services market through a strategy based on multiple distribution channels and strong *brand-name products and services.*

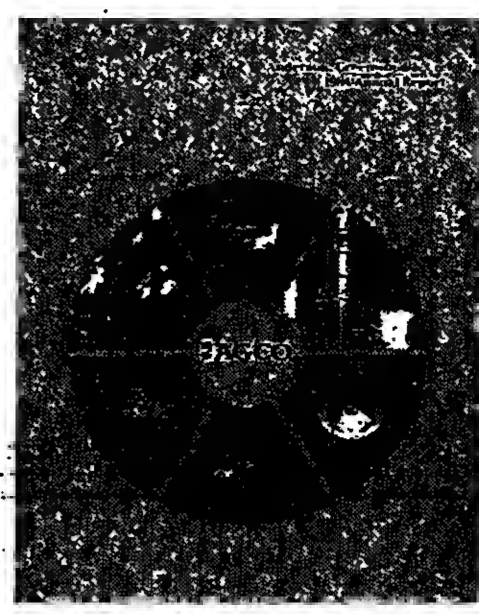


American Medical International, Inc.

AMI owns, manages and develops hospitals and provides health care services throughout the world. AMI had record earnings of $155.2 million or $1.85 per share on revenues of $2.5 billion in FY 1984. Increased utilization of AMI facilities and services as it responds to the changing health care marketplace, should result in further earnings *gains of 15-20 percent over the next few years.*

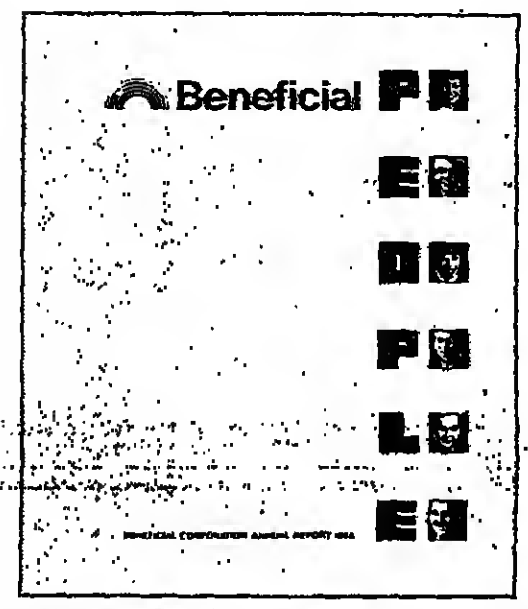
AMETEK, Inc.

AMETEK's sales topped one-half billion dollars for the first time last year, and profits increased 13% to a record $42.7 million, producing a return on equity of 24.3% and maintaining the steady upward curve of earnings which began back in the 1970's. AMETEK's annual report focuses on new products – electronic aircraft instruments, undersea robot work submarines, *DC* motors for the computer market, water filters and new medical instrumentation.



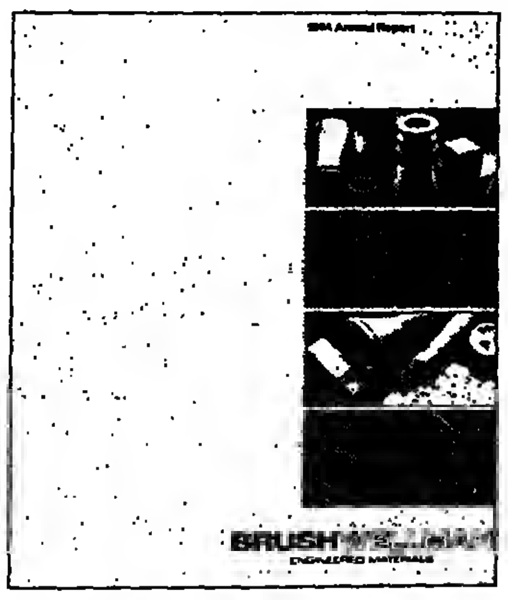
Anderson, Greenwood & Co.

Anderson, Greenwood & Co., headquartered in Houston, Texas, is a leading producer of safety relief valves and instrument valves. Formed in 1947, the Company also manufacturers a wide range of check valves and power plant valves, as well as other related products. The Company's common stock is traded on the New York Stock Exchange under the symbol "AGV."



Beneficial Corporation

Benficial Corporation is one of the world's leading consumer financial services companies. Through its 1,155 office network and through its banking and thrift units, the Company is a leading provider of consumer credit and insurance services to consumers nationwide. Moreover, Beneficial is uniquely positioned to thrive in the deregulated financial services environment evolving in the *United States.* Western Auto Supply Company represents Beneficial's Merchandising Division.



Brush Wellman, Inc.

The world's leading manufacturer of *beryllium materials achieved* another record year in 1984. Net income gained 62%, while worldwide sales climbed 31% to $322.6 million. Earnings per share increased to $2.20 from $1.39 in 1983. Over the past five years, the Company has achieved a compound growth rate of 15.9% in net income per share and 14.9% in sales of *its engineered materials.* The Company continues to maintain a conservative balance sheet, with a debt to total capitalization *ratio of only 12%.*

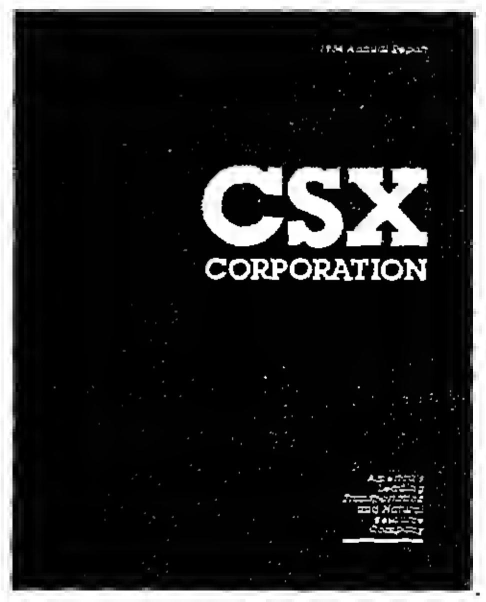
Chicago and Northwestern Transportation Company

Chicago and Northwestern Transportation Company is a leading railroad freight hauler in the U.S. central transcontinental corridor and a major originator of western coal and grain. Through strong and creative marketing efforts, acquisition of new rail lines, and divestment of uneconomic operations, the Company has dramatically strengthened *its traditional traffic base. Recent completion of a new rail line into* Wyoming's coal fields opens the way for the Company to become a *major* coal hauler.

Crownx Inc.

Crownx Inc. *is an integrated service* company operating in three high growth areas. Crownx provides insurance and financial services through the Crown Financial Group; health care services through the Extendicare Group, and information technology services through the Crowntek Group. Today, over 60 percent of consolidated revenue comes from the United States.

In strategic planning and operations, profit is emphasized as well as growth. The long-term viability of each business is preserved by an emphasis on internally generated growth.



CSX Corporation

CSX Corporation, the nation's leading transportation *and natural* resources company, completed 1984 with an all-time record income of $465 million. Assets reached $11.6 billion and revenue $7.9 billion. CSX received approval to control American Commercial Lines and became the first U.S. transportation company to provide rail–barge–truck integrated One-Stop Shipping[SM] for its customers.

CSX closed 1984 in a strong financial and physical position. The company will accelerate its aggressive marketing strategies for continued growth.

Part of 2½ page series appearing on May 28th, and May 29th.

Please send me the following Annual Reports:

- ☐ 1 AGS Computers, Inc.
- ☐ 2 Allied Corporation
- ☐ 3 AMCA International Ltd.
- ☐ 4 American Express Company
- ☐ 5 American Medical International, Inc.
- ☐ 6 AMETEK, Inc.
- ☐ 7 Anderson, Greenwood & Co.
- ☐ 8 Beneficial Corporation
- ☐ 9 Brush Wellman, Inc.
- ☐ 10 *Chicago and Northwestern* Transportation Company
- ☐ 11 Crownx Inc.
- ☐ 12 CSX Corporation

I also want these Annual Reports featured May 29th.

- ☐ 13 Engelhard Corporation
- ☐ 14 Federal-Mogul Corporation
- ☐ 15 FPL Group, Inc.
- ☐ 16 Frank B. Hall & Co. Inc.
- ☐ 17 Homestake Mining Company
- ☐ 18 Iomega Corporation
- ☐ 19 *Lincoln National Corporation*
- ☐ 20 Masco Corporation
- ☐ 21 Michigan General Corporation
- ☐ 22 Nabisco Brands, Inc.
- ☐ 23 Northern Telecom Limited
- ☐ 24 NOVA, An Alberta Corporation
- ☐ 25 Pandick, Inc.
- ☐ 26 Pay'N Pak Stores, Inc.
- ☐ 27 Rainier Bancorporation
- ☐ 28 R. J. Reynolds Industries, Inc.
- ☐ 29 *TransCanada PipeLines*
- ☐ 30 United Energy Resources, Inc.

Name __________

Position __________

Company __________

Address __________

Please return coupon by July 31st, 1985.

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Litton plans $1.3bn shares buyback

By Terry Dodsworth in New York

LITTON INDUSTRIES, the California-based technology group, has announced a sweeping restructure of its capital involving the buyback of 35.8 per cent of its stock for more than $1.3bn.

The project is the latest in a lengthening list of buybacks by leading U.S. companies, which have used the technique to reduce the number of shares in issue and lift their stock prices. During the economic recovery, many companies have been generating spare cash which they have used for buybacks, but others have issued debt in exchange for shares in an attempt to make a hostile bid more difficult.

Litton's plan involves the exchange of debt securities worth an estimated $87.60 a share for 15m of its shares, against a price of $77 a share on Friday, its highest point of the year. The share price rose sharply on Thursday and Friday, finishing $3½ up.

Litton said that if the offer was accepted by shareholders, it would discontinue dividends after July 1. This would enable the group to maintain its cash hoard of $1.5bn, and would be "consistent with our high-technology orientated business and our strategic plans."

Over the past two years, Litton has disposed of several of its businesses, shedding in the process its image of a rambling conglomerate, and concentrating its activities on advanced automation, industrial electronics and geophysical interests.

Teledyne, another Californian technology conglomerate which owns 26 per cent of Litton's shares, has agreed to the stock repurchase plan.

Rights issue from Moulinex

By Our Financial Staff

MOULINEX, the French electrical appliances group which earlier this year linked with Scotvill of the U.S., plans to raise around FFr 190m ($19.5m) through a rights issue.

Proceeds of the fund raising, a one-for-four at FFr 65 a share, will be used to finance future development, Moulinex said. Its shares changed hands on the Paris bourse recently at FFr 99.

NEC and Oki report profit rise

BY YOKO SHIBATA IN TOKYO

JAPAN's two major manufacturers of telecommunications equipment and electronics, NEC Corporation and Oki Electric, reported sharp earnings improvements in the year to March 31 1985.

NEC's pre-tax profits rose 88.4 per cent to Y125.9bn ($500m), reflecting buoyant sales of semiconductors and strong sales of personal computers on the domestic market. Net profits were Y51.1bn, up 47.5 per cent, after more than doubled tax charges of Y74.8bn.

Net profits per share were Y37.19, against Y27.87 in the previous year.

The dividend was raised from Y4.0 to Y4.5, making a total of Y8.5, against last year's Y7.75.

Turnover surged 29.4 per cent to Y1,889.34bn reflecting a dramatic increase in sales of electronic goods and buoyant sales of multi-purpose and personal computers. Personal computer sales rose 50 per cent to Y203bn – 40 per cent of the industry total of Y470.7bn. NEC said its sales of computers surpassed those of IBM Japan during the year, coming second to Fujitsu.

NEC, the world's second largest maker of semiconductors after Texas Instruments of the U.S., recorded a 46.8 per cent increase in sales of electronic goods.

Semiconductor production rose by 53 per cent to Y590bn.

Oki Electric's pre-tax profits jumped 58 per ceot to Y16.48bn in the year to March 31, 1985. Net profits more than doubled from Y5.43bn to Y11.01bn, oo turnover moving ahead by 19 per cent from Y303.52bn to Y361.89bn. The dividend was lifted Y1 by one to Y6.00.

Higher sales of digital exchanges and car telephones led to a 27 per cent rise in sales in the communication equipment division to Y91.1bn. Sharp gains in sales of printers boosted the sales in data processing sector by 12 per cent to Y185bn.

Benefits from volume production more than offset negative factors such as lower prices of semiconductors caused by stiff price cutting and higher depreciation charges.

For the current fiscal year, Oki forecasts a 9 per cent increase in pre-tax profits to Y18bn.

IRI cuts loss and lifts sales

BY ALAN FRIEDMAN IN MILAN

ISTITUTO per la Ricostruzione Industriale (IRI), Italy's largest state holding group with more than 500 companies and 505,000 employees, has reported a 1984 loss of L2,244bn ($1.1bo), 22.6 per cent less than its loss the previous year.

The L665bn loss reduction was struck on total aggregated group revenues of L41,052bn, up 11.3 per cent on 1983. Depreciation charges last year were up by 30.2 per cent at L4.452bn, while total 1984 investments reached L7.731bn, a rise of 16.8 per cent.

As in the past few years, the largest losses came from Finsider, the IRI-owned steel maker, which in 1984 lost L1,527bn. Finmeccanica, the group which controls the loss-making Alfa Romeo car company, last year made a L591bn deficit.

Fincantieri, the shipbuilding company, lost L85bn, but STET, the telecommunications company, made a L443bn profit, as did Alitalia, the state airline. Rai, the state television company made a small loss.

IRI's total net debt is L39,000bn net equivalent to 95 per cent of 1984 total turnover. Debt servicing charges last year amounted to 14.6 per cent of turnover, or L6,000bn.

IRI's operating profit last year represented 19.3 per cent of turnover, at L17,924bn. The group shed 23,700 workers last year (5,600 of them through sales of companies), bringing the total workforce down to 504,900.

● Kraft, the U.S. foods group, is paying about L100bn ($51m) to take majority control of Invernizzi, the Milan-based cheese and dairy products company, which is one of Italy's largest in the sector.

Last year Invernizzi recorded profits of L10bn on 1984 total sales of more than L300bn. Kraft's Italian subsidiary last year had revenues of L280bn and profits of L11bn.

The combined market presence of Kraft Italia and Invernizzi should create an Italian foods group close to the size of Parmalat, another key Italian company

Barlow Rand suffers 5% profits fall

By Our Johannesburg Correspondent

BARLOW RAND, the major South African industrial, financial and mining group, yesterday reported a 5 per cent fall in pre-tax profits to R385.4m ($195m) for the six months ended March 31, after "very difficult local trading conditions."

Net earnings attributable to ordinary shareholders fell 4 per cent to R121m, while earnings per share dropped from 77.7 cents to 67.7.

Apart from the domestic recession, which "cut margins and volumes in most divisions," the results were also affected by the acquisition of Bibby in the UK with effect from October "which diluted earnings by 5 per cent" and the increase in taxes on mining companies imposed in the March budget.

Good results from Bibby kept dilution below the originally forecast 7 per cent.

The acquisition of Bibby and a marked increase in export turnover because of rand depreciation contributed to a 27.3 per cent rise in first half group turnover to R6bn. Higher interest rates and overseas borrowing related to the Bibby purchase lifted interest charges by 90 per cent to R173.3m.

The group reports strong performance from the mining division and established exporters. Food companies also produced steady results, but elsewhere margins were hit by falling demand.

The interim dividend for the six months ended March is maintained at 21 cents and the group expects to pay an unchanged 70 cents dividend for the full year to end September.

Merger of travel units ruled out

THE West German Federal Cartel Office has rejected a merger of the travel units of Kaufhof and Karstadt, two major stores groups, as it would stifle competition, Reuter reports from West Berlin.

A spokesman for the office said the merger would further reinforce the position of Karstadt's fully owned subsidiary NUR Touristik and Kaufhof's ITS, which hold a 16 per cent market share and together with two other travel agencies, TUI and Tjaereborg, control the German market.

Karstadt and Kaufhof announced the plan for the merger last January, saying it was necessary to withstand competition.

NUR's turnover fell 2 per cent to DM 1.138bn ($368m) in the year ending last October. It has not published earnings figures.

Earnings advance at RAS

BY OUR MILAN CORRESPONDENT

RIUNIONE ADRIATICA di Sicurta (RAS), Italy's second largest insurance group, of which Allianz Versicherung of West Germany last year acquired effective control, achieved a 36 per cent rise in net profit for 1984 to L20.4bn ($10.3m).

The profits rise was achieved on the back of total premium income which was np by 11.2 per cent to L3,173bn. The proportion of premiums earned in Italy by the eight Italian companies in the RAS group was just under a third of the total. The balance came from 27 overseas RAS companies, including units in Britain and the U.S.

In the U.S. market RAS made a loss of $8m on premiums of $26m, while in the UK RAS broke even on £13m of premiums.

Dr Franz Schmitz, chairman, said yesterday that Allianz now owned 33.52 per cent of RAS and would boost this stake to 51 per cent within three years. He said Allianz and RAS were working to integrate their activities in Europe and elsewhere.

In Italy, where RAS manages L3,300bn of funds, the goal is to continue acting as more than just an insurance company and to move increasingly towards financial services.

● Michelin Italia, the Turin-based subsidiary of France's Michelin tyre company, last year reduced its deficit to L12.3bn ($6.2m) from the L28.9bn lost in 1983.

The 1984 loss, which means Michelin Italia has now been in the red for three consecutive years, occurred on total sales of L973.6bn, up 8.6 per cent.

NEW INTERNATIONAL BOND ISSUES

Borrowers	Amount m.	Maturity	Av. life years	Coupon %	Price	Lead Manager	Offer yield %
U.S. DOLLARS							
Ryobi ¶‡	30	1990	5	8¼	100	Yamaichi Int.	8.250
Casio §‡	100	2000	15	3	100	Daiwa Europe	3.000
Arab Banking Corp. †(b)‡	150	2000	18	¹⁄₁₆	100	Société Générale	–
Volvo Capital (f)‡	150	1990	5	10½	99¾	Merrill Lynch	10.567
EDC (e)‡	100	1990	5	10	99⅞	CSFB	10.033
BP (g)‡	100	1994	5.7	10½	100⅜	Morgan Stanley	10.434
BP (g)‡	182.46	1995	10	0	38.59	Morgan Stanley	9.896
Dai-Ichi Kangyo HK ‡	150	1990	5	10⅜	100⅜	Dai-Ichi Kangyo Int.	10.275
Sweden (h) ¶‡	300	2015	30	11⅛	99½	Merrill Lynch	11.183
ITT Credit ‡	75	1990	5	10½	101	Morgan Guaranty	10.235
EEC †(c)‡	1.8bn	1990	5	¹⁄₁₆	99.925	CSFB	–
Hyundai Eng. †(k)‡	50	1993	8	(k)	100	LTCB (Asia)	–
Canadian Pacific ‡	100	1993	8	10¾	100½	Orion Royal Bank	10.854
CANADIAN DOLLARS							
LTCB, Japan ‡	100	1994	9	11⅛	100¾	LTCB Int.	10.898
AUSTRALIAN DOLLARS							
New S. Wales GIO ‡	40	1989	4	13⅛	100	Bankers Tst. Int.	13.125
Westpac Banking ‡	50	1988	3	13½	100	Orion Royal Bank	13.500
D-MARKS							
Hoogovens ‡	150	1995	10	7⅜	100	Deutsche Bank	7.375
Hydro Quebec ‡	200	1995	10	7⅛	100	West LB	7.125
Bank of China	150	1992	7	7	100	Deutsche Bank	7.000
SWISS FRANCS							
American Medical ‖¶(j)‡	115.4	1997	–	6½	100	Soditic	6.500
Continental Health §	50 max	1995	–	(6)	*	Bqe Gutzwiller, K.B.	*
Minebea Co. ¶‡	120	1993	–	3½	100	Credit Suisse	3.500
Ireland ‡	100	1997	–	5⅞	100	SBC	5.875
Asian Dev. Bank ‡	100	2005	–	6¼		Credit Suisse	6.250
Asian Dev. Bank †(a)‡	50	2000	–	⅛	100	Credit Suisse	–
Victoria Elec. Comm. **‡	47	1992	–	5¼	99¾	SBC	5.294
EPDC, Japan	100	1995	–	(5½)	*	SBC	*
STERLING							
Standard Chartered (e)(d)†‡	150	–	–	³⁄₁₆	100	Schroder Wagg	–
ICI (e)‡	75	1995	8¼	11⅛	100	S.G.Warburg	11.250
ECUs							
BAC-CCB Savings Bk ‡	23.5	1993	8	9¾	100¼	Kredietbank Int.	9.704
Sumitomo Corp. ‡	60	1993	8	9¼	100	Banque Paribas	9.250
EEC **	50	1995	10	*	*	Bank of Tokyo	*
Bank of Tokyo ‡	40	1990	5	9⅛	100¼	Bank of Tokyo Int.	9.061
GUILDERS							
Asian Dev. Bank ‡	200	2000	15	7¾	99½	ABN	7.888
YEN							
New Brunswick ‡	10bn	1995	10	7⅛	100½	Bank of Tokyo Int.	7.054
IADB ‡	30bn	2000	13.32	7.1	99.9	Nikko Securities	7.237

* Not yet priced. ‡ Final terms. ** Private placement. § Convertible. † Floating rate note. ¶ With equity warrants. ‖ Dual-Currency. (a) ⅛ over 6m Libor. (b) ¹⁄₁₆ over 6m Libor. (c) ¹⁄₁₆ over 6m Libid. (d) ³⁄₁₆ over 3m Libor. (e) Additional tap. (f) Extendable to 2000. (g) Partly paid. (h) Registered with U.S. S.E.C. (i) Perpetual. (j) Principal repayable in US dollars; $75m total. (k) 1st 4 years, ⅛ over 6m Libor; last 4 years, ³⁄₁₆ over 6m Libor. Note: Yields are calculated on AIBD basis.

U.S. Quarterly Results

BANK OF BRITISH COLUMBIA
Banking

Six months	1984-85 C$	1983-84 C$
Assets	3.18bn	3.18bn
Net profits	2.4m	1.5m
Net per share	0.06	0.04†

† Loss

BOMBARDIER
Transportation equipment

First quarter	1985 C$	1984 C$
Revenue	124.0m	88.3m
Net loss	3.6m	1.2m
Net per share	0.32	0.11

DATAPOINT
Computer eqpt.

Third quarter	1984-85 $	1983-84 $
Revenue	125.5m	155m
Net profits	27.9m†	8m
Net per share	1.40†	0.38
Nine months		
Revenue	395.1m	435.5m
Net profits	42.4m†	22.7m
Net per share	2.11†	1.10

† Loss

FEDERATED DEPT. STORES
Retailing

First quarter	1985 $	1984 $
Revenue	2.16bn	2.06bn
Op. net profits	43.4m	36.8m
Op. net per share	0.89	0.74

R. H. MACY
Retailing

Third quarter	1984-85 $	1983-84 $
Revenue	954.3m	908.9m
Net profits	81.9m	36.5m
Net per share	0.82	0.72
Nine months		
Revenue	3.4bn	3.15bn
Net profits	164.5m	177m
Net per share	3.21	3.50

TOYS 'R' US
Toy shops

First quarter	1985 $	1984 $
Revenue	326.1m	247.4m
Net profits	12.2m	9.6m
Net per share	0.14	0.11

TURBO RESOURCES
Energy resources

First quarter	1985 C$	1984 C$
Revenue	146m	136m
Net profits	†17m	†25m
Net per share	†0.85	†1.00

† Loss

WAL-MART STORES
Discount retailer

First quarter	1985 $	1984 $
Revenue	1.60bn	1.28bn
Net profits	61.60m	43.64m
Net per share	0.37	0.31

UK COMPANY NEWS

Second half lift takes Samuel profits 10.7% ahead to £5.8m

INCLUDING figures from James Walker, Goldsmith and Silversmith from April 1984, turnover of H. Samuel, Birmingham-based multiple retail jeweller, expanded by over 36 per cent from £89.85m to £122.59m for the year ended February 2 1985, while taxable profits moved ahead 10.7 per cent from £5.21m to £5.76m.

Following the usual first-half loss, second-half profits rose from £6.1m to £7.39m.

While competition remains intense, the directors say that sales in the current year continue to show a further steady improvement. They expect further benefits to feed through from the Walker acquisition, "but as usual our year's results will largely depend upon the all-important Christmas period."

Walker turnover for the period amounted to £26.8m of the total which included £15m (£11.34m) of VAT.

On capital increased by the Walker acquisition, earnings per 25p share, after tax of £2m (same), are shown as 4.3p, compared with 4.07p, while the dividend for the year is maintained at an effective 4.17p with a final payment of 3.17p net.

After extraordinary credits of £406,000 (£273,000) profits attributable came through ahead from £3.47m to £4.17m of which preference dividends took £50,000 (£45,000) and ordinary £3.71m (£3.23m).

The directors point out that freehold and long leasehold properties have been valued at £71m, some £47m over book value, and has been incorporated in the group balance sheet as at February 2 1985.

The annual general meeting will be held at Hunters Road, Birmingham on July 18.

BOARD MEETINGS

The following companies have notified dates of board meetings to the Stock Exchange. Such meetings are usually held for the purpose of considering dividends. Official indications are not available as to whether the dividends are interims or finals and the sub-divisions shown below are based mainly on last year's timetable.

TODAY

Interims:—Archimedes Investment Trust, Northern American Trust, Scottish National Trust, Telecomputing.

Finals:—Allied-Lyons, Courtaulds, Dencora, Ferguson Industrial, Frank G. Geiss, Howard and Wyndham, Sheraton Securities International.

FUTURE DATES

Interims:—

Appledore (A. and P.)	May 30
United Spring and Steel	June 5

Finals:—

Airflow Streamlines	June 3
Capital and Strategy Fund	May 31
F and C Alliance Investment	June 10
LCP Holdings	June 6
Pegler-Hattersley	June 5
Southend Stadium	May 31
United Computer & Technical Holdings	May 29

Delyn down 62% to £0.12m

As expected at the halfway stage, the results for the 53 weeks to February 3 1985 by Delyn Packaging did not match the previous year's record.

On turnover up by 31 per cent, from £3.88m to £5.09m, pre-tax profits were £121,000, down by 62 per cent from last year's £319,000. This was due to increased competition, the introduction of new technology, which incurred retraining costs and changes in layout, and high overtime costs, factors which pushed the company into the red in the first half.

The chairman, Mr Geoffrey Fisher, says that the problems have been resolved and the company's plastic division is larger and more efficient. The benefits of this are expected to be seen in the present year.

The profit downturn also reflects the Welsh company's unsuccessful involvement in producing containers for the dairy industry. This did not meet expectations and production ended in December 1984.

Positive progress is being seen in the policy of developing year-round sales for giftwrapping. Changes in marketing and sales, with further investment in production facilities, has given a greater variety in the company's scope of manufacture. This has resulted in a much healthier order book for the present year.

He adds that this financial year should see increases in turnover and the board anticipates a much improved profit level.

Tax was £21,000, compared with last year's credit of £50,000, giving net profits of £100,000 (£369,000). There was no extraordinary items, unlike last year's credit of £50,000, giving earnings per 20p share of 5.03p, down 13.51p from the previous year.

A final dividend of again 1p has been proposed, making an unchanged total for the year of 2.5p.

SHARE STAKES

Changes in company share stakes announced over the past week include:

Spencer Clarke Metal Inds.—D. M. Howarth, chairman and chief executive, has sold 20,000 shares, thereby reducing his shareholding to 230,000 (4.61 per cent).

Stat-Plus Group—On May 23, director T. J. Painting disposed of 484,000 shares from his beneficial holding, thereby reducing his holding to 1,377,120 shares (19.2 per cent). On the same day D. C. Bird, a director, disposed of 234,000 shares from his beneficial holding and 200,000 from his non-beneficial holding. This reduces his holdings to 1,352,120 beneficial shares (18.9 per cent) and 16,667 non-beneficial shares (0.02 per cent). Mrs P. E. Bird, also a director, sold 50,000 shares from her beneficial holding and 200,000 from her non-beneficial holding. This reduces her holdings to 8,333 beneficial shares (0.01 per cent) and 16,667 non-beneficial shares (0.02 per cent).

Ivory and Sime — The following directors have sold shares as follows: G. M. Ramsay beneficial 784,000 as trustee 16,000; I. F. Rushbrook beneficial 111,762, as trustee 15,350; P. de Salaberry beneficial 50,000; D. T. M. Ross beneficial 32,248; C. G. H. Weaver beneficial 86,500, as trustee 13,500.

Pegler-Hattersley — Britannic Assurance has purchased a further 25,000 shares, bringing the total holding of the Britannic Assurance group of companies to 1,550,000 shares (5.07 per cent).

Peerless closes kitchen business

By Charles Batchelor

PEERLESS, the Birmingham-based plastics, electronics and engineering group, is to shut down its Headway kitchen and bathroom marketing and distribution businesses with the loss of nearly 90 jobs.

Peerless first made a £200,000 provision for potential bad debts at Headway in the six months ended September 1984 but the problems were greater than expected and the companies made an after-tax loss of about £1.3m, it said.

The company put the blame on a failure in credit and stock control. This was compounded by the decision by a major supplier to change its pricing and distribution policies, leading to a fall in margins and turnover at Headway.

"These problems, taken together, have left Peerless with no alternative but to close Headway. Closure costs are likely to be around £900,000 after taxation," the company said.

Despite these problems Peerless intends at present to maintain its final dividend at last year's 6.3p per share, leaving the total dividend for the year ended March 1985 unchanged.

The unaudited group loss is likely to be £1.3m after the Headway closure costs, tax and write-offs of stocks and debts.

Unaudited group figures showed pre-tax profits of more than £2m from the trading companies which will form the continuing basis of the group. Another Peerless subsidiary, Glendale Furniture, will continue to make and market kitchen equipment.

Peerless's shares fell 3p to 85p on Friday.

Northern Foods £6m U.S. purchase

Keystone Foods, a U.S. subsidiary of Northern Foods, has agreed to buy the home services division of CPI Corporation of Missouri for $8.1m (£6.4m) in cash.

The division being acquired is the licensee for Sears Roebuck for consumer household services in the western part of the U.S.

The acquisition, scheduled for completion in June, will expand KeyServ's network to 60 depots with sales of over $100m.

Keystone's main business is the sale of burgers and chicken to the McDonald chain.

Talbex gets backing

Talbex Group, an industrial holding company bidding for Yorkgreen Investments, has won the backing of Yorkgreen's independent directors after increasing the value of its all-paper offer from £1.66m to £1.99m. Both companies are chaired by Mr David Green.

Talbex, which has just completed a capital reduction, is now offering two of its shares for each Yorkgreen.

Tiny still has foot in Fraser door with preference holding

Mr Roland "Tiny" Roland is still fighting a rearguard action in his eight year struggle for control of House of Fraser, the Harrods department store group.

Lonrho, Mr Roland's international trade group is understood to hold a 12 per cent stake in House of Fraser 5.25 per cent preference shares, enough to prevent Fraser's new owners, the Al Fayed brothers of Egypt, from compulsorily buying in the outstanding preference equity.

It was the discovery of the Lonrho holding, held through a nominee company, which last week persuaded the Al Fayeds to abandon their efforts to sweep up Fraser's preference shares.

The Al Fayeds launched an agreed £615m take-over bid for House of Fraser in early March and have since gained full control of its ordinary shares.

Mr Roland has been fighting since the late 1970s for control of House of Fraser against determined opposition from its board, headed by Prof Roland Smith.

The continued listing of House of Fraser's three classes of preference shares, together worth less than £700,000, does not affect the control exercised over the company by the Al Fayeds.

But it does mean they will have to continue sending annual reports of the company to the preference shareholders and possibly reveal more about the company's affairs than they might otherwise have wished.

Preference shareholders have only very limited voting rights but Lonrho may be able to use its preference stake as a platform from which to monitor closely developments at Fraser.

Lonrho declined to confirm or deny that it still owned a share stake. Mr Paul Spicer, a director, said: "I don't really have a lot to say about the matter. I don't feel inclined to comment."

The Al Fayed won acceptances from the holders of 85 per cent of Fraser's 5.25 per cent preference shares, 5 per cent short of the 90 per cent needed to compulsorily purchase the rest under Section 209 of the Companies Acts. It won 82 and 89 per cent of the two other classes of preference shares.

The Al Fayeds last week let their preference offer lapse rather than take an insufficient level of acceptances.

REA acquiring Applied Botanics in £2m deal

BY LIONEL BARBER

REA Holdings, the plantation group, has agreed to buy Applied Botanics, the loss-making house pot plant USM stock, in a deal worth around £2.22m.

Applied blamed its loss of independence on heavy losses incurred in 1984, notably in its wholly-owned subsidiary, the New Ruaton Garden Company.

Applied, advised by Noble Grossart, said publication of its latest accounts had been delayed because the company was likely to prove in breach of its borrowing limits. Losses for the year to the end of 1984 were expected to be not less than £1m, and a financial reconstruction was "essential."

REA, advised by NM Rothschild, is offering one new ordinary share and two new REA 9 per cent cumulative preference shares of £1 each for every 300 Applied ordinary shares of 2.5p each.

REA is also offering 3p in cash for every eight Applied deferred shares. Applied holders of unsecured convertible loan stock 1995/2000 will be able to exchange their stock for new REA 12 per cent convertible unsecured loan stock.

COMPANY NEWS IN BRIEF

Pre-tax profits of the Jackson Group, construction and industrial services group, moved ahead by 10 per cent from £1.13m to £1.24m for 1984, on turnover up by 6 per cent to £31.1m.

A final dividend of 2.65p lifts the total from 3.43p to 3.85p. After tax of £462,000 (£28,000) earnings per share were down from 21p to 14.9p. Net asset value rose to 133p, at the year end, against 119p.

The directors say that with the current order position better than ever before they are encouraged "to take a cautiously optimistic view of the present year."

* * *

Turnover of Prince of Wales Hotels, Southport-based hotelier, increased from £12.29m to £14.14m for 1984 while taxable profits advanced from £724,000 to £763,000.

After tax of £53,000 (£44,000) earnings per share were given as 5.76p (5.94p) while a same-again final dividend of 1p leaves the total unchanged at 1.5p for the 12 months.

* * *

Brewer and soft drink manufacturer Morland and Company, lifted pre-tax profits from £927,000 to £1.03m for the six months ended March 31, 1985 on turnover of £8.22m, compared with £7.47m.

After tax of £462,000 (£440,000) earnings were 7.1p (6p) per share, from which an interim dividend will be paid of 2.25p (2p) net. Last year's final payment was 3.75p.

* * *

Net asset value per 25p share at Philip Hill Investment Trust improved from 264.2p to 303.4p in the year to March 31, 1985. The final dividend is increased from 6.25p to 6.85p net for a total up from 8.25p to 9.65p. Stated earnings per share rose from 8.38p to 9.82p.

Gross revenue for the year was £15.45m (£13.3m) and after administration expenses of £905,000 (£821,000), pre-tax revenue was up from £12.3m to £14.64m. Tax (including imputed tax credits) was £5.1m against £4.19m.

F.T. Share Information

The following securities have been added to the Share Information Service:—

Ferguson (James) (Section: Textiles)

Muscocho Explorations (Canadians)

Nationwide Building Society 12¼ pc (21/4/86) (Loans, Building Societies)

Sintrom (Electricals)

FINANCIAL TIMES STOCK INDICES

	May 24	May 23	May 22	May 21	May 20	May 17	1985 High	1985 Low	Since Compilation High	Since Compilation Low
Government Secs.	80.80	80.83	80.93	80.91	80.88	80.30	82.00	78.02	127.4	49.0
Fixed Interest	85.76	85.70	85.65	85.79	85.63	85.34	86.19	82.17	150.4	50.0
Ordinary	1001.6	1010.8	1020.9	1020.2	1015.0	1008.3	1024.6	922.7	1024.3	49.0
Gold Mines	477.3	479.8	484.9	481.5	489.5	484.1	556.9	438.6	734.7	43.4
FT Act. All.Share	634.53	640.34	642.98	641.92	639.68	637.91	642.88	581.88	642.98	61.92
FT SE100	1313.8	1325.6	1333.8	1334.1	1330.8	1387.4	1342.4	1206.1	1348.4	986.9

Over-the-Counter Market

Capitalisatn. £000's	Company	Price	Change on week	Gross div.(p)	Yield %	P/E Actual	P/E Fully taxed
4,950	Ass. Brit. Ind. Ord.	146	+1	6.6	4.3	8.1	8.8
—	Ass. Brit. Ind. CULS	150	—	10.0	6.8	—	—
3,125	Airsprung Group	54	—	6.4	11.9	6.0	7.1
900	Armitage and Rhodes	36	+1	2.9	8.1	4.6	7.3
45,753	Bardon Hill	150	+2	3.4	2.3	15.1	25.2
3,135	Bray Technologies	57	—	3.8	8.8	5.9	8.0
570	CCL Ordinary	163xd	—	12.0	7.4	4.0	3.5
1,375	CCL 11pc Conv. Pref.	110	—	15.7	14.3	—	—
6,889	Carborundum Ord.	115	—	4.9	4.3	6.7	8.9
616	Carborundum 7.5pc Pf.	88	—	10.7	12.2	—	—
3,600	Deborah Services	46	−2	6.5	14.1	4.4	7.1
20,724	Frank Horsell	325	+5	—	—	13.1	17.1
—	Frank Horsell Pr.Ord.87	260	—	9.6	3.7	10.4	13.7
4,189	Frederick Parker	29	—	—	—	—	—
1,052	George Blair	57	—	—	—	3.8	7.7
853	Ind. Precision Castings	21	+1	2.7	12.9	5.8	5.2
13,849	Isis Group	181	−1	15.0	8.3	7.2	13.1
5,468	Jackson Group	105	—	4.9	4.7	4.8	9.5
32,725	James Burrough	236	−2	13.7	5.8	8.4	8.4
3,120	James Burrough 9pc Pf.	90	+1	12.9	14.3	—	—
9,275	John Howard and Co.	89	+3	5.0	5.6	7.1	11.1
3,744	Linguaphone Ord.	223	−1	—	—	8.2	8.3
—	Linguaphone 10.5pc Pf.	98	—	15.0	15.3	—	—
17,367	Minihouse Holding NV	638xd	—	6.9	1.1	27.9	28.5
812	Robert Jenkins	60	+2	3.0	8.3	—	—
1,440	Scruttons "A"	34	—	5.7	16.8	17.9	4.1
1,855	Torday and Carlisle	76	—	—	—	8.2	17.3
1,496	Trevian Holdings	330	—	4.3	1.3	18.9	18.4
4,710	Unilock Holdings	30	—	1.3	4.3	14.8	21.0
13,049	Walter Alexander	102	—	7.5	7.4	10.1	12.3
3,321	W. S. Yeates	228	+2	17.4	7.6	8.3	11.2

Prices and details of services now available on Prestel, page 48146

RECENT ISSUES

EQUITIES

Issue price	Amount paid up	Latest Renunc. date	1985 High	1985 Low	Stock	Closing price	+ or −	Net Div.	Times covered	Gross Yield	P.E. Ratio
‡93	F.P.	—	106	104	✠Abbeycrest 10p	105		42.5	2.5	6.4	16.7
‡‡360	N.P.	15/6	93	77	Anglo-EastPlants	87	−1	—	—	—	—
—	F.P.	—	40	37	Do. Warrants	40		—	—	—	—
§195	F.P.	31/5	181	164	✠Aspen Comms. 5p	177		u6.0	2.8	2.1	22.8
172	F.P.	28/6	182	178	Asda Property 20p	178	−2	u3.0	2.1	2.4	25.8
—	F.P.	—	830	780	Banco de Bilbao S.A.	800		—	—	—	—
—	F.P.	—	700	650	Banco de Santander	660		—	—	—	—
¶185	F.P.	3/6	225	160	✠Bedford (William)5p	160	−2	n3.5	2.0	3.1	17.7
¶130	F.P.	17/6	120	100	Blagden Inds.	118		7.2	1.8	9.8	7.6
375	200	10/8	853	228	British Aerospace 50p	822	−3	13.55	3.1	4.9	7.4
165	F.P.	31/5	175	158	✠Clayform Props. 5p	170		bg7.5	2.1	6.3	10.6
135	F.P.	21/6	135	120	Coloroll 10p	121	−3	bg4.5	2.5	8.4	10.8
§84	F.P.	21/6	103	97	✠Datron Int'L 5p	97	−3	u1.0	5.9	1.5	11.4
200	F.P.	31/5	300	260	Domino Print. Scienc.	275	−5	u1.75	4.3	0.8	38.7
§117	F.P.	31/5	130	120	✠Electron House 10p	127		bg2.7	1.9	3.0	23.1
§300	F.P.	28/6	410	370	✠H'lmes &Marsh10p	375		u3.0	4.1	1.4	25.8
§129	F.P.	7/6	200	172	✠Howard Group 5p	185	−5	bg4.8	6.2	3.1	14.3
§150	F.P.	7/6	208	166	✠Huntleigh Tech 5p	200		u1.5	3.5	1.1	31.6
100	F.P.	21/6	103	101	MartinCurrie Pac.30p	101		—	—	—	—
§28	F.P.	14/6	30	28	✠Maxiprint 1p	30		—	—	—	—
§120	F.P.	7/6	161	143	✠Moorgate Group 5p	161	+1	bg8.0	6.2	1.6	34.6
§116	F.P.	28/3	118	114	✠Norscot Hotels 50p	114		—	—	—	—
110	F.P.	7/6	112	106	Persimmon 10p	106	−2	bg4.75	3.6	6.4	6.1
£7.23*	F.P.	26/4	86	80	Plantation Tst	80		—	—	—	—
—	F.P.	—	40	38	Do. Warrants	38	−1	—	—	—	—
100	F.P.	7/6	106	86	Prestwick 5p	98	−8	u2.1	3.3	3.5	12.5
¶178	F.P.	7/6	205	173	✠Sherwood Com 10p	188	−2	b2.75	3.4	2.1	19.8
¶175	F.P.	6/5	190	170	Sintrom 10p	190	+10	ug1.64	3.3	1.4	31.4
§180	F.P.	25/6	183	113	✠Viewplan 3p	115	−5	u1.26	4.0	1.6	20.9
130	F.P.	10/6	143	137	✠Wayne Kerr 10p	143		u1.5	4.6	1.5	22.7
§68	F.P.	24/5	72	68	✠Wyko Group 10p	68		b2.4	6.4	5.0	11.0

FIXED INTEREST STOCKS

Issue price £	Amount paid up	Latest Renunc. date	1985 High	1985 Low	Stock	Closing price £	+ or −
—	F.P.	—	85	83	Anglo-East Plts. 12½% Uns. Ln. 95-99	84	
¶¶	F.P.	—	107	100	Bramall (C.D.) 15% Cnv. Uns. Ln. 85/2005	107	
86.81	£30	19/6	31½	30	Int.-Am. Dev. Bk. 8¾% Ln. 2015	30½	
—	Nil	—	8	8	Lon. & Edin. 5½% Conv. Cum. Rd. Prf.	8	
—	F.P.	5/6	100	99¾	Malaysia 10⅛% Ln. 2009	100	
90.706	£30	6/6	30	28½	Nationwide Bldg. Soc. 12¼% 12/6/86	30½	+¼
—	F.P.	5/6	99	92	Plantation Tst 7½% Uns. Ln. 1995	[illegible]	
—	F.P.	6/6	106	105	Queens Moat 7% Cnv. Rd. Prf.	107	
—	F.P.	19/7	5pm	4pm	Russell (A.) 5.75% Cum. Cnv. Rd. Prf.	4pm	
—	F.D.	14/6	114	105	Saatchi 6.3% Cnv. Cum. Red. Pref.	108	−3
49.895	£10	12/7	16½	15	Spain (Kingdom of) 11¾% Ln. 2010	15½	+¼
¶¶	F.P.	—	128	108	Williams Hldgs. 5% Cum. Cnv. Prf.	123	+5
¶¶	F.P.	—	115	103	Do. 10% Cum. Prf.	113	

RIGHTS OFFERS

Issue price p	Amount paid up	Latest Renunc. date	1985 High	1985 Low	Stock	Closing price p	+ or −
193	Nil	16/7	81pm	7pm	Anchor Chemical	7pm	−6
200	F.P.	24/5	378	355	Bank of Scotland £1	376	−5
150	Nil	14/6	393	383	Barclays £1	386	−3
350	Nil	5/7	40pm	28pm	Beazer (C.H.) 70p	38pm	−2
66	Nil	31/5	4pm	1pm	Brit. Empire Sec. & Gen. 5p	1½pm	
80	Nil	26/6	10pm	5pm	✠Crowther Square 10p	10pm	+1
55	Nil	6/7	7	4	Lon. & Northern	6	
516	Nil	19/7	127pm	110pm	Low Wm. 20p	183pm	
293	Nil	26/6	60	40	Macmec 10p	45	
95	F.P.	7/6	11	86	Nationwide Leisure	95	
66	Nil				Newman Inds. 10p		
70	Nil		4	3	✠Rivlin (I.O.S.) 5p	3	−1
120	Nil		14pm	1pm	Suter 5p	12pm	−2
228	F.P.	26/6	257	250	Tesco 5p	257	+2
10	Nil		19pm	8pm	"The Times" Veneer	19pm	−2
150	Nil		81pm	54pm	Tomkins (F.H.) 5p	43pm	−3

Renunciation date usually last day for dealing free of stamp duty. b Figures based on prospectus estimate. d Dividend rate paid or payable on part of capital, cover based on dividend on full capital. g Assumed dividend and yield. u Forecast dividend cover based on previous year's earnings. F Dividend and yield based on prospectus or other official estimates for 1985. H Dividend and yield based on prospectus or other official estimates for 1984. Q Gross. p Pence unless otherwise indicated. ¶ Issued by tender. ‖ Offered holders of ordinary shares as a "rights." ** Issued by way of capitalisation. §§ Reintroduced. ¶¶ Issued in connection with reorganisation merger or takeover. ■ Allotment letters or fully-paid. ‖‖ Introduction. ✠ Unlisted Securities Market. § Placing price. T Figures assumed. †† Official London Listing. ‡‡ Dealt in under Rule 535(3).

PENDING DIVIDENDS

Dates when some of the more important company dividend statements may be expected in the next few weeks are given in the following table. The dates shown are those of last year's announcements except where the forthcoming board meetings (indicated thus*) have been officially notified. Dividends to be declared will not necessarily be at the amounts in the column headed "Announcement last year."

	Date	Announcement last year
Aitken Hume	May 29	Final 4.0
*Allied-Lyons	May 28	Final 4.339
Amersham International	June 11	Final 3.1
Anglo Amer Corp SA	June 4	Final 85c
*Argyll Gp	June 11	Final 4.643
Avana	June 29	Final 5.625
BPB Inds	June 27	Final 4.2
Bassett Foods	June 13	Final 4.55
Beecham	June 14	Final 5.5
Bensford (S. & W.)	June 18	Interim 3.3
*Boots	May 30	Final 3.5
British Land	June 19	Final 1.3
*British Telecom	June 18	Final due
Burnett and Hallamshire	June 22	Final 4.75
Cable and Wireless	June 28	Final 4.1
*Capital and Counties	May 29	Final 3.3
*Carless Capel	May 29	Final 1.75
Centrovincial Estates	June 14	Final 3.0
Charter Cons.	June 27	Final 7.25
*Cealite	May 29	Final 4.13
*Courtaulds	May 28	Final 3.0
De La Rue	June 5	Final 18.4
Electrocomponents	June 25	Final 2.7
Elliott (B.)	June 14	Final nil
*English China Clays	June 7	Interim 3.8
*Extel	May 30	Final 9.0
Ferranti	June 27	Final 4.4
*Fitch Lovell	June 20	Final 6.7
GEI Intl	June 18	Final 3.555
Great Portland Ests	June 12	Final 4.3
Guinness	June 12	Interim 1.62
*Habitat Mothercare	June 6	Final 4.5
Hambros	June 26	Final 42.75
*Hanson Trust	June 4	Interim 1.75
*Harrisons and Crosfield	May 29	Final 26.0
*Hill Samuel	May 31	Final 7.6
Johnson Matthey	June 20	Final 7.0
LRC Intl	June 19	Final 2.35
*MEPC	May 29	Interim 2.3
*McCorquodale	June 4	Interim 2.0
*Metal Box	June 11	Final 8.19
*Meyer Intnl	June 18	Final 3.1
*Norcros	June 4	Final due
*Northern Foods	June 19	Final 2.5
*Pegler Hattersley	June 5	Final 8.3
*Pilkington Bros	June 12	Final 6.3
Powell Duffryn	June 20	Final 11.0
Racal Electronics	June 28	Final 2.18
*Redland	June 13	Final 8.175
**Reed Intnl	June 5	Final 11.5
*600 Group	June 13	Final 9.3
*Sketchley	June 3	Final 2.91
Smith Bros	May 30	Final 9.9
Staveley Inds	June 14	Final 4.0
*Tate & Lyle	May 29	Interim 8.5
Tesco	June 13	Final 2.6
Trusthouse Forte	June 26	Interim 1.125
*Unigate	June 17	Final 4.73
*Vclor	June 12	Final 2.926
Wedgwood	June 19	Final 3.5
Westland	June 13	Interim 3.0
*Wolverhampton & Dudley Brws	May 29	Interim 2.65

* Board meeting intimated. † Rights issue since made. ‡ Tax free. § Scrip issue since made. ¶ Forecast.

BANK RETURN

BANKING DEPARTMENT	Wednesday May 28 1985	Increase (+) or Decrease (−) for week
LIABILITIES	£	£
Capital	14,553,000	—
Public Deposits	5,144,907,153	− 88,855,674
Bankers Deposits	840,621,807	+ 25,831,396
Reserve and other Accounts	1,564,485,014	− 5,887,482
	7,564,507,974	− 78,218,660
ASSETS		
Government Securities	443,631,381	− 144,748,880
Advance & other Accounts	817,316,435	− 7,897,601
Premises Equipment & other Secs.	6,299,579,669	+ 74,620,948
Notes	5,569,831	− 691,346
Coin	310,658	− 1,771
	7,564,507,974	− 78,812,560

ISSUE DEPARTMENT

	£	£
LIABILITIES		
Notes in circulation	12,696,430,168	+ 190,681,346
Notes in Banking Department	3,569,831	− 691,346
	12,300,000,000	+ 190,000,000
ASSETS		
Government Dept	11,015,100	—
Other Government Securities	2,101,390,508	+ 895,857,501
Other Securities	10,187,594,398	− 105,857,501
	12,300,000,000	+ 190,000,000

APPOINTMENTS

Executive changes in BPB Industries

Mr A. G. Turner, in addition to continuing as chief executive of BPB INDUSTRIES, will succeed Mr F. G. Flood as chairman when the latter retires from the board on October 30. Mr John Moore has been appointed managing director of D. Anderson and Son, but will continue as the company's sales and marketing director. Mr Keith Pearson, previously both chairman and managing director, remains chairman and also continues his chairmanship of Metrotect, Plaschem, and Gyproc Insulations, all companies within the parent BPB Industries group.

*

NATIONAL AND PROVINCIAL BUILDING SOCIETY has announced the appointment to the board of its chief executive, Mr John Richardson. In May this year he was elected president of the Chartered Building Societies Institute.

*

Mr Martin Johnson has been appointed to the newly-created post of director of finance and administration, GREYHOUND LINES INTERNATIONAL. He was previously financial accountant at Lex Service Group.

*

Mr W. R. Rowland is seconded from Royal Insurance to ROYAL LIFE and appointed deputy general manager from September 1.

*

Mr R. Cunliffe is appointed group comptroller, ROYAL INSURANCE, from September 1. Mr D. M. Heather is appointed deputy group comptroller from the same date.

*

Mr Clive Strowger, chairman and chief executive of Express Dairy Group, has been elected vice-president of the DAIRY TRADE FEDERATION. He succeeds Mr Nicholas Horsley.

*

Mr David Walker has joined LYCETTS (CUMBRIA) as a director.

*

Mr Dominic Brooks has been appointed regional director of the new southern office of BRIAN WOODHEAD GROUP, management consultants. He was until recently managing director of Hawker Siddeley Revenue Controls.

*

CARGO EQUIPMENT INTERNATIONAL has announced the following appointments to its board: Mr R. G. Schweitzer (chairman); Mr C. R. Hall (chief executive); Mr M. L. Wildi (industrial marketing); Mr P. J. Dymond (marine marketing); Mr E. G. Thomas (production).

*

Mr Joe Blower has been elected to the board of CSS as technical support director. He joined the company two years ago.

*

Mr Nicholas Bancroft has been appointed a director of LAURENTIAN INVESTMENT MANAGEMENT, a subsidiary of the Imperial Life Assurance Company of Canada. He was previously a director of Dunbar Fund Managers.

*

Mr Kenneth Downer has been appointed to the board of W. A. SOUTER AND SON (COWES). He joined Souters as chief executive in 1978.

*

Mr Brian Evarard, of Geoffrey Osborne (Civil Engineering), has been appointed to the main board of the OSBORNE GROUP. In 1984 he was made a director of Geoffrey Osborne (Civil Engineering), a subsidiary of the Osborne Group, and will remain on that board. Mr Fred Bruce has become a non-executive director of Geoffrey Osborne Limited following a nine year association with the firm. He also joins the group's main board.

*

Mr John A. Mercer, the chief accountant of NORTH WEST SECURITIES, the Bank of Scotland finance house subsidiary, has been appointed to the board.

*

Mr P. R. Grice, Mr P. J. C. Ashfield and Mr P. J. Brickell have joined the equity partnership of TEATHER & GREENWOOD, stockbrokers.

*

Sir Hugo Huntingdon-Whiteley (a former partner of Price Waterhouse) and Mr Robert B. Norman (a director of H. J. Heinz) are appointed non-executive directors of MALCOLM McINTYRE & PARTNERS.

*

Mr A. Miyazawa, managing director, NEC BUSINESS SYSTEMS (EUROPE) based in London, has been appointed vice president, NEC Corporation in Tokyo, and will be responsible for the international planning division. He will be replaced by Mr H. Nose, previously general manager of the first middle and near east division. Mr J. M. Harper has been appointed special advisor to the board on telecommunications and office automation. He was managing director, inland division, British Telecom.

*

THE NATIONAL MUTUAL LIFE ASSURANCE SOCIETY has appointed Mr Henry C. Hoare, a managing partner of C. Hoare and Co., bankers, as a non-executive director. Mr Jonathan Mitchell and Mr Gavin Hill, currently assistant general manager (sales and marketing) and assistant general manager (investment) respectively, become executive directors.

WEEK'S FINANCIAL DIARY

The following is a record of the principal business and financial engagements during the week. The board meetings are mainly for the purpose of considering dividends and official indications are not always available whether dividends concerned are interims or finals. The sub-divisions shown below are based mainly on last year's timetable.

YESTERDAY

BOARD MEETINGS—

Finals:

Capital Gearing Tst

TOMORROW

COMPANY MEETINGS—

BL, Dorchester Hotel, Park Lane, W. 12.00

Freemans, Tallows Chandlers Hall, Dowgate, E. 13.00

French Connection, Howard Hotel, Temple Place, WC. 11.00

London United, 30 Threadneedle Street, EC. 13.00

Magnolia, Sutton Road, Rochford, Essex. 12.00

Oilfield Inspection, Bessemer Way, Harfreys Industrial Estate, Great Yarmouth. 11.45

Philcom, 103 New Oxford Street, WC. 11.30

Prudential Corporation, 143 Holborn Bars, EC. 12.15

Rio Tinto-Zinc, Grosvenor House, Park Lane, W. 3.30

Stanley (A.G.), Ion on the Park Hotel, Hamilton Place, W. 11.30

Arbuthnot Government Secs Tst

Debase Park Inds

DIVIDEND & INTEREST PAYMENTS—

A.P.V. Hldgs 6.75p

Ace Belmont International 10pcCumPf 5p

Adams Gibbon 7½pcCumPf 3.625p

Alexander Alexander Services Inc 25cts

Allen (Edgar) Balfour 7½pcDb 1987-92 3¾pc

Allied-Lyons 9½pcPf 1.925p, 7½pcPf 2.625p

Aman 1.7p

Anchor Chemical 6pcPf 1.05p

Anglo Nordic 10pcLn 1989 5pc

Armitage Bros 7½pc1stDb 1985-90 3¾pc

Arncliffe Hldgs 0.1p

Ash Lacy 13p

Invicta Gilt Income Fund Pf 30p

JWT 28cts

Jersey General Invest Tst 5½pcPf 2.275p

Johnsen Jorgensen Packaging 2.5p

Johnson Matthey 8½pcDb 1988-90

Jove Invest Tst 2.6p

Kleinwort Benson Gilt Fund Pf 31.01p

SUNDAY, JUNE 2

DIVIDEND & INTEREST PAYMENTS—

Shell Transport and Trading (Reg) 31.1p

Do (Br) 21.1p

Slough Estates 3p

Standard Bank Imp and Export Fin Gtd Flting Rate Nts 1992 £179.97

Technology for Business 4.62p

Unilever NV Sub-shs Fl 5.67

Wadkin 1p

Carpets Intl, 9 Mill Street, Kidderminster. 2.30

Erith, Chartered Accountants' Hall, Moorgate Place, EC. 12.00

Evered Holdings, Connaught Rooms, Great Queen Street, WC. 12.00

BOARD MEETINGS—

Finals:

Capital Strategy Fund

Freshbake Foods

Hill Samuel

Southend Stadium

Interims:

House of Fraser 3.5p

India (State Bank) Fltg Rate Nts 349.92

BUILDING CONTRACTS

£33m strengthening plan for Severn crossing

BY JOAN GRAY, CONSTRUCTION CORRESPONDENT

THE FIRST of the £33m contracts for strengthening the Severn Bridge has been awarded to Christiani and Neilsen of Cardiff.

Worth £740,000, the first contract is for preliminary works to provide access for the major strengthening programme which will begin early next year.

Details of the programme—worth £33m at 1983 prices—were announced by Transport Minister Mrs Linda Chalker last month, following a report by consultants Mott Hay and Anderson which suggested that under certain freak conditions the bridge was in danger of collapsing.

There has also been bitter complaints that traffic delays on the bridge—South Wales' industrial lifeline—had deterred new industry from investing in the area.

The latest strengthening programme will make it possible for the bridge to carry heavier loads of traffic. The bridge will also be totally resurfaced, for the first time since it was built for £8m 20 years ago.

The contract awarded to Christiani and Nielsen—which won the job after submitting the lowest tender from a list of nine competitors — involves putting large manholes on the steel boxes which support the deck of the bridge, and removing flotation diaphragms from inside the boxes.

This will give access to contractors for carrying out the major strengthening works which will begin next year. The Department of Transport will be inviting further tenders for work worth about £18m later this year, with the remainder to come in 1986 and 1987.

Following complaints about lengthy delays and traffic jams on the bridge when earlier repairs were being carried out, the Department is emphasising that these latest repairs are being planned to minimise interference with traffic.

No complete carriageway closure will be permitted, and if there are any lane closures they will be mainly overnight. Holidays · weekends will be avoided.

£10m for Crown House

CROWN HOUSE ENGINEERING has received a batch of orders worth around £10.4m in the North of England. A contract valued at around £5m has been placed by Cameron Hall Developments for the new Metro shopping centre at Dunston, Gateshead. The multi-service design and construct contract includes air-conditioning, sprinklers, water and gas supplies, together with the electrical installation. An order has been received for the main electrical installation for the new Nissan car plant at Sunderland. The £1.4m contract includes lighting, power distribution network, alarms, emergency, external and street lighting services, and is for completion in early 1986. The PSA has awarded a contract, valued at £534,000, for mechanical services to Ptarmigan Training Centre, Vimy Barracks, Catterick. Completion is scheduled for March 1986. Crown House Engineering has also been awarded a contract for mechanical services to the Norweb headquarters building at Hadrian Mill, Carlisle. The contract, valued at £350,000 will be carried out as a sub-contract to Eden Construction. A contract valued at around £3.1m for electrical and mechanical services for Bridlington New Hospital by Yorkshire Regional Health Authority will be undertaken as part of a joint venture with Higgs and Hill Northern. Part of a project worth £11.7m this phase is scheduled for completion in January 1988. Harrogate health authority will be responsible for the design of the hospital comprising the main block, boiler house / mortuary, ambulance station, works department and residential block.

Refurbishment

FAIRWEATHER CITY has won several structural conversions and refurbishments. These include a further order from Blue Circle Industries for refurbishment work at Portland House, SW1 (about £1m); refurbishment and modernisation for BP Chemicals International at Belgrave House, SW1 (about £500,000); structural repairs for Excess Insurance at 13 Fenchurch Avenue (about £250,000); fitting out for Steelcase Strafor in Swiss Cottage (about £330,000); upgrading and refurbishment for Louis J. Mintz and Son at Livonia Street, W1 (about £250,000); and structural conversions for the TAVRA at the TA Centre, Battersea (about £1m).

£20m work for Wimpey

Work has started by WIMPEY CONSTRUCTION UK on an industrial complex for W. L. Gore and Associates (UK) on the high technology site in Dundee; it is the first of three complexes that will be built for this company on this site under a management contract. The complex will be steel-framed with insulated metal cladding and solar controlled glazing and will be used by W. L. Gore for the newly-developed Fluorshield process for coating storage vessels. Completion of this factory is set for September and the offices by the end of the year. All three buildings will be of similar design and construction. Up to the first floor will be concrete frame with stone cladding. The upper floor will be a light steel frame with deeply-sloping glazing behind which will be the ventilating plant, but in certain areas it will be possible to have direct ventilation from outside. The roof will be of lightweight reflective proprietary material. At the edges will be glazing to allow indirect natural light through to certain work areas and corridors. Total value of the three contracts is over £20m and full completion is not expected before 1990.

*

Ciba-Geigy upgrades production facility

A £12m design-and-construct package has been awarded to KYLE STEWART by Ciba-Geigy Pharmaceuticals for extensive modernisation work to its Horsham, Sussex, production plant. The contract includes new construction and refurbishment to form a 175,000 sq ft main production building for liquids and tablets. Construction work will be phased over five years to enable manufacturing work to continue uninterrupted for almost the entire duration of the project.

*

A £1m contract has been awarded to TANDATA refurbishment division of the Jarard Group, to provide 21,000 sq ft of office space on eight floors at Rivers House, Chelmsford, former headquarters of the Anglia Water Authority.

NOTICE OF REDEMPTION

To the Holders of

SCOTT PAPER OVERSEAS FINANCE N.V.

(now Scott Paper Company)

8¾% Guaranteed Debentures Due July 1, 1986

Issued under Indenture dated as of July 1, 1971, as supplemented

NOTICE IS HEREBY GIVEN that pursuant to the provisions of the above-mentioned Indenture, $1,349,000 principal amount of the above described Debentures has been selected by lot for redemption on July 1, 1985 through operation of the Sinking Fund, at the principal amount thereof, together with accrued interest to said date, as follows:

OUTSTANDING DEBENTURES OF U.S. $1,000 EACH OF PREFIX "M" BEARING SERIAL NUMBERS ENDING IN THE FOLLOWING TWO DIGITS:

02	04	11	14	17	29	37	41	56	59	66	72	78	85	90	94
03	08	12	36	22	32	39	51	67	62	69	77	81	87	92	98

ALSO OUTSTANDING DEBENTURES OF PREFIX "M" BEARING THE FOLLOWING SERIAL NUMBERS:

8 2568 2668 2768 2968 4468 10868 12968 19868

On July 1, 1985, the Debentures designated above will become due and payable in such coin or currency of the United States of America as at the time of payment shall be legal tender for the payment of public and private debts. Said Debentures will be paid, upon presentation and surrender thereof with all coupons appertaining thereto maturing after the redemption date, at the option of the holder either (a) at the corporate trust office of Morgan Guaranty Trust Company of New York, 30 West Broadway, 13th Floor, New York, New York 10015, or (b) at the main offices of Morgan Guaranty Trust Company of New York in Brussels, Frankfurt am Main, London and Paris, Banca Nazionale del Lavoro in Milan and Rome, Swiss Bank Corporation in Basle, Geneva and Zurich, Bank Mees & Hope NV in Amsterdam, Crédit Lyonnais in Paris, Société Générale de Banque S.A. in Brussels and Banque Générale du Luxembourg S.A. in Luxembourg. Payments at the office of any paying agent outside of the United States will be made by check drawn on, or transfer to a United States dollar account with, a bank in the Borough of Manhattan, City and State of New York. Any payment made by transfer to an account maintained by the payee with a bank in the United States may be subject to reporting to the United States Internal Revenue Service (IRS) and to backup withholding at a rate of 20% if payees not recognized as exempt recipients fail to provide the paying agent with an executed IRS Form W-8, certifying under penalties of perjury that the payee is not a United States person or an executed IRS Form W-9, certifying under penalties of perjury the payee's taxpayer identification number (employer identification number or social security number, as appropriate). Those holders who are required to provide their correct taxpayer identification number on Internal Revenue Service Form W-9 and who fail to do so may also be subject to a penalty of $50. Please therefore provide the appropriate certification when presenting your securities for payment.

Coupons due July 1, 1985 should be detached and collected in the usual manner.

On and after July 1, 1985, interest shall cease to accrue on the Debentures herein designated for payment.

SCOTT PAPER COMPANY
By MORGAN GUARANTY TRUST COMPANY OF NEW YORK, Trustee

Dated: May 28, 1985

NOTICE

The following Debentures previously called for redemption have not as yet been presented for payment:

DEBENTURES OF $1,000 EACH

M 628	633	4313	4347	4353	4433	4445	4453	7247
631	637	4345	4348	4363	4438	4448	4463	18283

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WORLD STOCK MARKETS

TOKYO

Support proves selective

INSTITUTIONAL buying of shipbuilding and steel groups led a rally in Tokyo yesterday, *writes Shigeo Nishiwaki of Jiji Press.*

Major textile and chemical stocks also firmed, while biotechnology-related stocks and blue chips were out of favour.

The Nikkei-Dow stock average added 48.97 to 12,643.73 – the first rise in three sessions. Volume remained high at 412.97m shares, althougb it was down from last Friday's 531.98m. Advances outnumbered declined 424 to 358, with 131 issues unchanged.

The market was more buoyant than had been expected, despite Wall Street's closure.

The 10 most active list was dominated by large-capital issues. The busiest was Mitsubishi Heavy Industries with 22.62m shares changing hands, as it rose Y5 to Y290.

Other popular stocks were electric power and gas utilities. Tokyo Electric Power climbed Y60 to Y1,970 and Tokyo Gas Y6 to Y217. Institutional investors and foreign investors expect lower interest rates to improve these corporations' performances.

Mitsubishi Chemical Industries, fourth busiest with 15.97m shares traded, firmed Y1 to Y516.

Groups with strong off-the-book assets were also sought after. Nippon Express moved up Y5 to Y398, Tokyo Corp Y5 to Y414, Tokyo Tatemono Y55 to Y735, and Mitsubishi Warehouse Y12 to Y462.

Biotechnology-related stocks weakened on a broad front. Dainippon Pharmaceutical shed Y110 to Y4,370, Kaken Pharmaceutical Y90 to Y2,500 and Mochida Pharmaceutical Y270 to Y10,990.

Large-capital issues are expected to lead trading in June, in view of the rapidly increasing participation in the market by corporations and money trust funds. Individual investors have also begun to return.

Bond trading remained lacklustre, due to the uncertain market outlook. Some long-term credit banks and agricultural and forestry financial institutions sold holdings for profit-taking, while some city banks moved in to buy.

The yield on the barometer 7.3 per cent government bond due in December 1993 rose slightly from 8.560 per cent to 8.570 per cent.

HONG KONG

A SHARP decline in prices followed the withdrawal of institutional support in Hong Kong.

The fall accelerated during the day as small investors moved in to pick up profits. By the close of business the Hang Seng index was down 39.06 to 1,557.78, having been 22 lower at the morning close.

Properties led the slide with Cheung Kong falling 30 cents to HK$16.10, Hongkong Wharf 15 cents to HK$6.25 and Sun Hung Kai Properties 30 cents to HK$11.60.

SINGAPORE

A COMBINATION of bearish domestic factors allowed sellers to gain control of trading in Singapore, although price movements were generally small.

Reflecting the market's underlying weakness turnover fell to 4.2m shares compared with 8.8m on Friday while the Straits Times industrial index closed 3.33 down at 814.91.

Profit taking, in response to recent strength in the finance and banking sectors, also helped erode prices.

SOUTH AFRICA

WITH MAJOR international bullion markets closed, trading among gold stocks in Johannesburg remained quiet and price movements were small.

Among the few changes, Southvaal dropped R1 to R86.50 and Buffelsfontein the same amount to R84 while of the cheaper stocks, South African Land and Exploration eased 20 cents to R5.50.

EUROPE

MARGINAL price downturns were recorded on the **Madrid** and **Milan** bourses during thin trading.

Bank stocks were among the most heavily traded in both centres, following the pattern established during business over the past two weeks. In Madrid Banco Vizcaya advanced 2 percentage points to 434 per cent of nominal value while Banco Espanol de Credito fell 1 percentage point to 345 per cent of nominal value.

According to the Madrid Stock Exchange, foreign purchases increased 225 per cent in the first quarter of the year compared with the previous corresponding term.

Markets in London, New York and most European centres were closed yesterday for national holidays.

In Milan major losses included Montedison down L8 to L1,719 and Olivetti down L11 at L3,200.

Trading in fixed-interest bonds was quiet with prices little changed.

AUSTRALIA

A SHARP fall in the value of the Australian dollar weakened confidence in Sydney and left a broad range of mining and industrial stocks lower in thin trading.

Gold and hase metal sbares, which bave been solidly supported recently, came in for the beaviest selling with GMK and Nuigini Mining each 20 cents lower at A$7.90 and A$11.80 respectively.

Strongly influenced by falls among blue chip stocks the All-ordinaries index finished 4.5 lower at 878.7.

CANADA

A FIRMER tone developed during trading in Toronto with banks gaining ground in reaction to the recent budget.

The Royal Bank traded up C$⅜ to C$30⅜ followed by Bank of Montreal up C$⅝ to C$27⅝ and Toronto Dominion C$⅜ higher at C$21½.

Montreal was also firmer in moderate trading.

Closing prices, May 24

NEW YORK STOCK EXCHANGE COMPOSITE CLOSING PRICES

12 Month High	Low	Stock	Div.	Yld.	P/E	Sls. 100s	High	Low	Close Quote	Ch'ge Prev. Close
23½	16	AAR	.48	2.7	14	18	18	17⅞	18	
16½	9⅜	AGS			12	59	14⅛	13¾	15¾	−⅜
16⅞	9⅝	AMCA				1	10⅞	10⅞	10⅛	
21½	13¾	AMF	.50	2.8	54	290	19	18¾	18⅞	+⅛
47⅛	24¼	AMR			10	4909	45½	44½	45	+¼
21½	18⅝	AMR pf2.16		10.		120	21⅜	21¼	21¼	
25⅞	22⅞	ANR pf2.67		11.		1	23¾	23¾	23¾	−½
14¼	7¾	APL				34	9½	8¾	9½	+⅛
65¾	44⅜	ASA			24 0	632	50⅝	50⅛	50⅝	−⅛
27	14⅛	AVX	.32	2.1	12	184	15⅝	15	15⅛	−⅛
24⅞	16	AZP	2.72	11.	7	1513	24½	24⅛	24⅜	+¼
54⅜	36¾	AbtLab	1.40	2.6	16	1033	54⅛	53¾	54⅛	+⅜
25⅞	17	AccoWd	.44	2.0	17	207	21¾	21½	21⅝	−⅛
20¾	12½	AcmeC	.40	2.8		257	14¼	14⅛	14¼	
10½	7⅝	AcmeE	.32b	4.0	10	1	8	8	8	
17½	15	AdaEx	1.92e	11.		80	17⅜	17⅛	17⅛	−⅛
20	11⅞	AdmMl	.32	2.0	8	23	15⅞	15⅝	15⅞	
18½	8⅝	AdvSys	.53t	5.1	17	97	10⅝	10⅜	10⅜	−⅜
41⅛	25⅛	AMD			18	2451	29⅜	28⅝	29¼	+¾
12¾	6⅞	Advest	.12	1.3		x212	9⅝	6	6⅛	+⅛
14⅝	8¾	Aerflex			12	27	12⅝	12½	12⅝	−⅛
46⅝	27¼	AetnLf	2.64	5.8	33	1158	45⅝	45¼	45⅜	+⅛
36	15¾	Ahmns	1.30	5.6	14	169	33½	33	33⅛	+¼
3⅝	2½	Aileen			23	22	3¼	3	8	−⅛
53½	36⅜	AirPrd	1.20	2.3	12	1075	52⅜	52	52⅜	+⅛
24⅜	13	AirbFrt	.80	2.6	12	145	21⅝	21	21¼	+¼
2	1	AlMoa s			23	1468	1¾	1⅝	1⅝	
33⅜	26¾	AlaP pfA3.92		12.		5	33¼	33¼	33¼	
8	8	AlaP dpf.87		11.		11	7¾	7¾	7¾	−⅛
78¼	61½	AlaP pf 9		12.		z800	76	76	76	−1
68⅛	56	AlaP pf 8.28		12		z70	u70	69	69	−½
16⅛	11	Alagsco	1.04	8.9	9	28	15⅜	15	13	−⅜
22⅞	8¼	AlskAir	.14	.9	8	1466	22¼	21⅞	21⅞	−¼
18¾	18½	Albrto s	.38	2.2	19	30	17½	19⅛	17	
33¼	22½	Albtsns	.76	2.4	15	348	22	31⅝	31⅝	−⅜
81¼	23¼	Alcan	1.20	4.6	15	408	20	25¾	26	+⅛
38⅛	27⅛	AlcoStd	1.20	3.5	12	473	34½	34	34	−⅜
32	17	AlexAlx	1	3.7		1926	27½	27	27¼	−¼
26½	20⅜	Alexdr			20	32	23¾	23½	23¾	+⅛
89½	71	AllgCp	2.06i	2.7	24	146	77¼	76¾	77¼	−⅛
28¾	16¾	Algint	1.40	5.5		135	25¼	25	25¼	
20	15¼	Algin pf2.19		11.		2	18⅛	18⅛	19⅞	+⅛
97½	81	Algi pfC11.25		12.		54	97	96½	96½	−⅝
33⅜	24⅝	AllgPw	2.70	8.4	8	317	32⅜	32⅛	32¼	
20⅞	15¾	AllenG	.60b	3.2	14	20	18¾	18⅝	18⅝	−¼
46¾	28¼	AlldCp	1.80	4.4	8	2508	40⅝	40¼	40½	+¼
60	53⅞	AldCp pf6.74		11.		52	63⅜	63	63	−½
113¼	29	AldCp pf 12		11.		1	109½	109½	109½	
107½	100¾	AldC pf 12.31e		12.		z22	102¼	102	162	−¾
23½	12½	AlldPd			19	37	17⅛	17½	17⅞	
58⅞	38	AlldStr	2.12	3.6	8	1616	56⅜	55¾	56	+¼
12⅜	5⅛	AllisCh				255	6⅜	5⅞	5⅞	−⅜
34⅝	24	AllisC pf				14	29¼	29⅛	29⅛	−½
27⅜	20	ALLTL	1.64	6.6	6	z70	27⅜	26¾	27	−⅛
35½	27⅛	ALLT pf2.06		5.8		x21	35½	35	35½	+1⅜
39⅞	29¾	Alcoa	1.20	3.7	16	1111	32½	32⅛	32⅜	
23⅛	15½	Amax	.20	1.2		595	16¾	16⅜	16½	
41½	32½	Amax pf	3	8.8		4	33½	33½	33½	
34	22¾	AmHes	1.10	3.8	21	1757	29⅜	28¾	29¼	
2¾	1¼	AmAgr				154	2	1⅞	2	
21½	15⅛	ABakr			6	55	21⅜	21	21⅜	+¼
70	55	ABrand	3.90	5.8	8	196	66¾	66½	66¾	+¼
28	24⅝	ABrd pf2.75		9.8		3	27¾	27¾	27¾	
70⅝	53	ABrd pf2.97		4.0		2	67¼	67¼	67¼	+¼
115	55¾	ABdcst	1.60	1.4	17	681	110¾	110¼	110¾	+½
28⅝	19½	ABldM	.86	3.3	13	18	26¼	26¼	26¼	+⅛
27⅛	20⅛	ABusPr	.64	2.5	14	x5	25¼	25⅛	25⅛	−¼
56⅜	40⅛	AmCan	2.90	5.2	11	1811	56⅜	55⅛	56¼	
25¾	21½	ACan pf2.80		11.		3	25¾	25⅜	25⅜	−⅛
50	36	ACan pf	3	6.1		704	49⅛	46½	49⅛	+⅛
[illegible]										

Kidder, Peabody International
Limited

International Investment Bankers

An affiliate of

Kidder, Peabody & Co.
Incorporated
Founded 1865

New York • London • Paris • Geneva • Zurich • Hong Kong • Tokyo

Continued on Page 27

AMERICAN STOCK EXCHANGE COMPOSITE CLOSING PRICES

Closing prices, May 24

12 Month High	12 Month Low	Stock	Div.	Yld.	P/E	Sls 100s	High	Low	Close Quote	Ch'ge Prev Close
7¼	3⅞	ADI	e		22	19	5⅜	5¼	5⅜	+⅛
16⅝	6⅛	AL Lab	.20	1 3	14	42	u16½	16¼	16½	+¼
22¾	12	AMC n	.12	.7	15	511	17¾	17⅝	17⅝	−⅛
5⅞	2⅝	AM Intl				118	4⅝	4	4⅛	
84	66	ATT Pd5	07e	6 1		90	82½	81⅞	82½	+½
8	2⅛	AcmePr				5	3	2⅞	3	+¼
16⅛	9¾	Action			32	295	11	10⅞	11	
7⅛	3	Acton				85	3⅝	3½	3½	−⅛
3⅜	1½	AdmRs			3	50	2⅛	2⅞	2⅛	+⅛
30¼	17¼	AdRusl	.14	.5	20	83	29	28⅞	29	+⅛
23⅜	15	Adobe	.20	1.5	12	127	18⅛	18	18⅛	−⅛
8⅝	4½	Aeronc			13	84	5¼	5⅛	5¼	
47¼	27⅞	AhIPo s	.60	1.3	21	44	47¼	47¼	47¼	
9¾	5¾	AirExp				1	6⅛	6⅛	6¼	
11⅛	5⅞	AirCal			14	206	9¾	6½	9⅝	+⅛
13	9¾	ArCal pf				215	11⅞	11¾	11⅞	+⅛
4¾	1	Alamco			20	58	1¼	1⅛	1⅛	
101	65½	Almito n			9	14	94¾	94	94	−1
10¼	6⅝	AlbaW			35	6	7¼	7¼	7¼	−⅛
8½	5⅝	Aloha				40	6½	6⅜	6½	−⅛
19	9½	Alphaln 05		.5	21	166	10¾	10⅝	10¾	+⅛
1	9-16	Altex				57	¾	11-16	¾	
36	28⅝	Alcoa pf3 75		11.		s150	34¼	33¾	34¼	+¼
28⅛	11	AlzaCp			44	14	24⅝	24¼	24⅝	+¼
18⅛	8½	Amdahl .20		1 5	17	763	13⅝	13½	13½	−¼
15⅞	6½	Amedco.08		1 2		72	7	6¾	6⅞	−⅛
10⅝	4⅞	AmBilt	.15	1.4	8	124	u10⅝	10	10⅝	+¼
7¾	4	AmCap			17	2	7¾	7⅝	7⅝	−⅛
37½	12¼	AExp wt				30	35	34½	34½	−¾
9	5⅝	AFruc A			13	s400	6⅝	6½	6⅝	
9	5⅝	AFruc B			11	z100	5¾	5¾	5¾	
12¼	7¼	AHlthM			13	168	9⅞	9½	9⅞	+⅜
8	4	Alsrael			2	11	6⅞	6¾	6¾	
19⅞	12⅝	AMzeA	.52	2 8	32	5	14½	14½	14½	−¼
18½	12¾	AMzeB	.52	3.9	29	3	13¼	13⅛	13¼	
[illegible]										

Continued on Page 28

NEW YORK STOCK EXCHANGE COMPOSITE CLOSING PRICES

Continued from Page 26

12 Month High	12 Month Low	Stock	Div.	Yld.	P/E	Sls 100s	High	Low	Close Quote	Ch'ge Prev. Close
[illegible]										

Continued on Page 28

Sales figures are unofficial. Yearly highs and lows reflect the previous 52 weeks plus the current week, but not the latest trading day. Where a split or stock dividend amounting to 25 per cent or more has been paid, the year's high-low range and dividend are shown for the new stock only. Unless otherwise noted, rates of dividends are annual disbursements based on the latest declaration.

a–dividend also extra(s). b–annual rate of dividend plus stock dividend. c–liquidating dividend. cld–called d–new yearly low. e–dividend declared or paid in preceding 12 months. g–dividend in Canadian funds, subject to 15% non-residence tax. i–dividend declared after split-up or stock dividend. j–dividend paid this year, omitted, deferred, or no action taken at latest dividend meeting. k–dividend declared or paid this year, an accumulative issue with dividends in arrears. n–new issue in the past 52 weeks. The high-low range begins with the start of trading. nd–next day delivery. P/E–price-earnings ratio. r–dividend declared or paid in preceding 12 months, plus stock dividend. s–stock split. Dividends begins with date of split. sls–sales. t–dividend paid in stock in preceding 12 months, estimated cash value on ex-dividend or ex-distribution date. u–new yearly high. v–trading halted. vi–in bankruptcy or receivership or being reorganised under the Bankruptcy Act or securities assumed by such companies. wd–distributed. wi–when issued. ww–with warrants. x–ex-dividend or ex-rights. xdis–ex-distribution. xw–without warrants. y–ex-dividend and sales in full. yld–yield. z–sales in full.

WORLD STOCK MARKETS

OVER-THE-COUNTER

Nasdaq national market, closing prices, May 24

[illegible]

Continued on Page 29

AUSTRIA

May 24	Price Sch%	+ or −
Creditanstalt	333	......
Goesser	531	−3
Interunfall	1,205	+55
Laenderbank	523	+1
Perlmooser	580	+19
Steyr-Daimler	189	−1
Veitscher Mag	619	......

BELGIUM/LUXEMBOURG

May 24	Price Frs.	+ or −
B.B.L.	1,950	−10
Banq. Int. A. Lux	6,000	......
Bekaert B	3,600	+100
Ciment CBR	2,456	+25
Cockerill	231	......
Delhaize	8,600	......
EBES	2,910	+35
Electrobel	8,620	+20
Fabrique Nat	1,966	+5
GB Inno BM	6,300	+105
GBL (Brux)	2,010	+50
Gevaert	3,775	+26
Hoboken	6,600	+80
Intercom	2,220	+70
Kredietbank	8,400	......
Pan Hldgs	11,000	......
Petrofina	6,170	+100
Royale Belge	11,960	......
Soc. Gen. Banq	3,300	......
Soc. Gen. Belge	1,935	+25
Sofina	7,020	+20
Solvay	4,425	+85
Stanwick Intl	1,500	......
Tractionel	4,195	+75
UCB	6,140	+80
Wagon Lits	3,210	+40

DENMARK

May 24	Price Knr %	+ or −
Andelsbanken	297	+7
Baltic Skand	560	+93
CopHandelsbank	270	......
D. Sukkerfab	593	+8
Danske Bank	298	......
De Danske Luft	1,133	......
East Asiatic	263	+7
Forenede Brygg	980	−10
[illegible]		

GERMANY

May 24	Price Dm.	+ or −
AEG-Telef	124.5	+5.9
Allianz Vers	1282xr	−24
BASF	214.2	−0.1
Bayer	224.8	−0.2
Bayer-Hypo	344.0	+0.5
Bayer-Verein	346xd	−2
BHF-Bank	305	−2
BMW	397	+8.5
Brown Boveri	212.5	−1.5
Commerzbank	187.8	−0.5
Cont'l. Gummi	159.0	−0.8
Daimler-Benz	795.0	+57
Degussa	346.0	−1.5
D'sche Babcock	159.5	+1.5
Deutsche Bank	486.8xd	−2
Dresdner Bank	225.3xd	−1.2
GHH	149.5	−1
Hochtief	501	+4
Hoechst	228.1	+0.1
Hoesch Werke	107.8	+2.1
Holzmann (P)	445	+5
Horten	180	+6
Hussel	298	−1
Karstadt	231	......
Kaufhof	240	−1
KHD	254	......
Kloeckner	70.0	+2.2
Linde	448	......
Lufthansa	199	+3
MAN	160	+3
Mannesmann	157.0	+1
Mercedes Hld	693	+25
Metallgesel	255.0	+0.5
Muench Rueck	1,350	+6
Nixdorf	693.3	+0.8
Porsche	1229	+10
Preussag	275	−4.5
Rhein West Elect	137.0	−1
Rosenthal	259.5	+0.5
Schering	464	+1
Siemens	553.3	−2.3
Thyssen	103.8	......
Varta	293	+14
Veba	184.5	−1
V.E.W.	139	−2.3
Verein-West	317	−2
Volkswagen	243.3	+2.3

ITALY

[illegible]

FRANCE

[illegible]

NETHERLANDS

[illegible]

NORWAY

May 24	Price Kroner	+ or −
Bergens Bank	143.5	−0.5
Borregaard	396.0	+7.5
Christiania Bank	140.6	−1.0
DenNorske Cred	147.5	......
Elkem	145	......
Kvaerner	166	+3
Norsk Data	411	+1
Norsk Hydro	111	−1
Storebrand	266	......

SPAIN

May 27	Price Pta %	+ or −
Bco Bilbao	345	......
Bco Central	322	......
Bco Exterior	215	......
Bco Hispano	137	−2
Bco Popular	366	......
Bco Santander	362	......
Dragados	168	−5
Hidrola	83.5	−1.5
Iberduero	94.5	+0.5
Petroleos	151	+0.8
Telefonica	121.2	......

SWEDEN

May 24	Price Kronor	+ or −
AGA	372	−8
Alfa-Laval	180	−4
ASEA (Free)	329	+2
Astra (Free)	440	......
Atlas Copco	118	......
Cardo (Free)	241	−4
Cellulosa	113	−4
Electrolux B	271	−19
Ericsson	997	......
Esselte	380	......
[illegible]		

SWITZERLAND

[illegible]

AUSTRALIA (continued)

Gen. Prop. Trust; Hardie (James); Hartogen Energy; Herald W'ylimes; ICI Aust; Jimberlana F.P.; Kia Ora Gold; Lend Lease; MIM; Mayne Nickless; Myer Emporium; Nat. Aust. Bank; News; Nicholas Kiwi; North Bkn Hill; Oakbridge; Pancontinental; Pioneer Conc; Poseidon; Queensland Coal; Reckitt & Coln; Repco; Santos; Smith (Howard); Thos. Nationwide; Tooth [illegible]

HONG KONG

[illegible]

JAPAN

[illegible]

JAPAN (continued)

[illegible]

SINGAPORE

[illegible]

SOUTH AFRICA

[illegible]

NOTES—Prices on this page are as quoted on the individual exchanges and are last traded prices. § Dealings suspended. xd Ex dividend. xc Ex scrip issue. xr Ex rights. xa Ex all.

AMERICAN STOCK EXCHANGE CLOSING PRICES

Continued from Page 27

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NEW YORK CLOSING PRICES

Continued from Page 27

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WORLD STOCK MARKETS

OVER-THE-COUNTER

Continued from Page 28

Stock		Sales (Hnds)	High	Low	Last	Chng
DrSwich		398	5	4¾	5	+¼
Datpwr		29	3½	2¾	2¾	−¼
Datacp		12	19	18½	19	
Dtasch		28	4	3⅞	4	+¼
Datum		53	8¼	8⅛	8⅛	
Dauphn	1.96	25	39½	38¾	38¾	−¾
DavWt	s	157	15⅛	15¼	15¾	−½
Dawson		5	8	8	8	+¼
DebSh	.20s	259	24¼	23½	23¾	+½
DeciaD		223	16¼	15	13⅛	−⅛
Docom		45	3⅞	3⅞	3⅞	+¼
DekibA	.72	98	25	24¾	24⅞	−⅛
Delchm	.28	621	17½	16⅞	17½	+1½
DeltaDt		81	1⅛	1⅛	1⅛	−⅛
DelNG	1.04	x45	11⅞	11½	11⅛	−¼
Deltak		8	6⅞	6⅞	6⅞	
Denelcr		811	2	1½	2	+¼
DentMd		838	7⅛	6⅞	7¼	+⅛
DepGty	2.20	41	45½	45½	45½	−¾
DetecEl		5	4⅞	4⅛	4⅞	+¼
DetrxC	1.20	18	32¼	31½	32¼	+½
Devry		322	9¼	6¾	9	−¼
DiagPr		132	16¼	12½	12⅞	−¼
DiaCry	s .20	5	27¾	27	27½	+½
Diasonc		345	3	2⅞	2⅞	−⅛
Dibrel	t	68	35¾	32¼	35¾	+3¼
Diceon		47	12½	12	12	
Dicmed		96	7½	6⅞	7	−⅛
DigtCm		146	26¼	26	26¼	+¼
DinnrBl	.40	5	10	10	10	+¼
Dionex		30	35¼	35¼	35¼	+¼
Dionic		7	4½	4⅛	4½	−¼
DistLog		11	6	6	6	
Dvlood	.34	5116	11⅞	11¼	11⅞	+⅛
DomTl		201	12½	10¾	12	+1¼
DocuOt		15	5¼	5¼	9¼	
DirGnl	.20	772	24⅞	23⅞	24⅞	+1
DomB	1.20	67	32⅞	32⅞	32⅞	+⅛
Donovn	1.36	15	20	20	28	
DrchH	.20	34	17	16¾	17	+¼

Continued on Page 30

Indices

NEW YORK

DOW JONES

	May 24	May 23	May 22	May 21	May 20	1985 High	1985 Low	Since Compil High	Since Compil Low
♦Industri'ls	1301.37	1296.71	1303.78	1309.70	1304.88	1309.70 (21/5)	1184.96 (4/1)	1309.70 (21/5/85)	41.22 (2/7/32)
H'me Bnds	77.90	77.71	77.58	77.29	77.23	77.00 (24/5)	72.27 (28/1)	—	—
Transport	627.55	620.67	622.90	606.22	626.99	685.30 (1/5)	553.03 (4/1)	685.30 (1/5/85)	12.32 (8/7/32)
Utilities	181.98	181.26	181.96	163.87	164.70	164.78 (17/5)	146.54 (4/1)	164.75 (17/5/85)	10.5 (28/4/42)
TradingVol 000's	85,970	101,000	101,370	130,150	146,260	—	—	—	—

♦Day's High 1306.87 (1307.80) low 1291.11 (1290.99)

	May 17	May 10	May 3	year ago (approx)
Industrial div. yield %	4.77	4.81	4.90	4.94

STANDARD AND POOR'S

	May 24	May 23	May 22	May 21	May 20	1985 High	1985 Low	Since Comp'n High	Since Comp'n Low
Indust'ls	208.74	208.04	208.97	210.02	209.86	210.02 (21/5)	186.94 (4/1)	010.02 (21/5/85)	3.62 (30/6/32)
Comp'site	188.29	187.60	188.56	189.64	189.72	189.72 (20/5)	163.68 (4/1)	819.72 (20/5/85)	4.40 (1/6/32)

	May 15	May 8	May 1	year ago (approx)
Industrial div. yield	3.84	3.92	3.93	4.10
Industrial P/E ratio	11.37	11.14	11.20	12.18
Long Gov. Bond yield	10.98	11.33	11.53	13.36

N.Y.S.E. ALL COMMON

May 24	May 23	May 22	May 21	1985 High	1985 Low
108.87	108.47	108.59	109.65	109.70 (20/5)	94.60 (4/1)

Rises and Falls

	May 24	May 23	May 22
Issues Traded	1,965	2,029	2,026
Rises	844	632	501
Falls	662	924	1,103
Unchanged	459	478	422
New Highs	—	107	108
New Lows	—	13	8

TORONTO	May 24	May 23	May 22	May 21	1985 High	1985 Low
Metals & Minerals	2025.8	2016.9	2028.4	2053.8	2190.07 (15/2)	1896.0 (4/1)
Composite	2718.4	2681.4	2708.1	2738.7	2739.7 (21/5)	0348.5 (8/1)
MONTREAL Portfolio	132.88	161.87	162.58	135.88	135.06 (21/5)	117.00 (8/1)

NEW YORK ACTIVE STOCKS

Friday	Stocks traded	Closing price	Change on day		Stocks traded	Closing price	Change on day
Dow Chemical	1,434,800	33½	+⅞	Hewlett-Pack.	791,000	33	+1
Jac Eckard	1,133,500	27¼	+1⅛	Pan Am.	783,500	6⅞	—
Republic	1,116,000	7⅞	+⅛	Phillips Pet.	772,300	39⅞	+⅛
Smithkline	905,000	70½	+3⅛	Atlantic Rich.	768,200	60⅞	+⅛
Mobil	796,000	31⅛	−½	Com'wealth Ed.	764,000	29⅞	−⅛

	May 27	May 24	May 23	May 22	1985 High	1985 Low
AUSTRALIA						
All ord. (1/1/80)	876.7	883.2	887.4	889.2	894.5 (20/5)	715.8 (7/1)
Metals & Minls. (1/1/80)	561.4	558.1	560.8	562.8	565.8 (20/5)	582.5 (7/1)
AUSTRIA						
Credit Aktien (2/1/62)	(c)	96.79	96.01	95.05	96.79 (24/5)	58.21 (24/1)
BELGIUM						
Brussels SE (1/1/80)	(c)	2305.85	2276.95	2253.95	2310.05 (15/5)	2080.7 (18/1)
DENMARK						
Copenhagen SE (3/1/83)	(c)	185.64	(u)	180.88	185.04 (24/5)	181.44 (8/1)
FRANCE						
CAC General (31/12/82)	(c)	221.5	228.4	225.1	227.5 (24/5)	180.8 (5/1)
Ind Tendance (28/12/84)	(c)	128.5	126.5	124.2	128.5 (25/5)	108.1 (5/1)
GERMANY						
FAZ Aktien (31/12/58)	(c)	446.25	442.38	488.29	446.25 (24/5)	382.38 (8/1)
Commerzbank (1/12/63)	(c)	1303.8	1294.8	1285.8	1303.8 (24/5)	1111.8 (5/1)
HONG KONG						
Hang Seng Bank (31/7/64)	1567.79	1596.94	1517.30	1599.84	1647.83 (17/5)	1220.74 (2/1)
ITALY						
Banca Comm Ital. (1972)	616.50	618.66	620.81	616.64	620.51 (25/5)	225.56 (2/1)
JAPAN**						
Nikkei-Dow (16/5/49)	12542.7	12585.8	12649.1	12673.5	12695.3 (8/4)	11545.2 (5/1)
Tokyo SE New (4/1/68)	989.83	986.15	981.92	986.59	1008.98 (22/5)	918.95 (4/1)
NETHERLANDS						
ANP-CBS General (1970)	(c)	209.1	209.5	208.8	213.0 (8/5)	185.8 (5/1)
ANP-CBS Indust (1970)	(c)	208.8	169.8	170.2	176.2 (7/5)	247.9 (5/1)
NORWAY						
Oslo SE (4/1/83)	(c)	336.50	336.11	330.57	345.8 (8/2)	288.18 (2/1)
SINGAPORE						
Straits Times (1966)	814.91	818.24	828.98	822.45	862.85 (7/5)	764.58 (18/1)
SOUTH AFRICA						
JSE Gold (28/9/78)	—	1049.8	1055.4	1074.8	1148.9 (15/4)	858.1 (11/2)
JSE Indust (28/9/78)	—	983.7	975.1	970.7	973.8 (24/5)	787.1 (7/3)
SPAIN						
Madrid SE (28/12/84)	116.24	116.71	111.25	111.53	117.41 (4/2)	101.48 (2/1)
SWEDEN						
Jacobson & P (1/1/58)	(c)	1371.90	(u)	1383.32	1486.88 (11/2)	1361.80 (2/1)
SWITZERLAND						
SwissBank Cpn. (31/12/58)	(c)	435.90	434.7	434.5	435.8 (24/5)	388.7 (3/1)
WORLD						
Capital Intl. (1/1/70)	—	—	210.4	211.8	212.9 (20/5)	194.8 (4/1)

** Saturday May 18: Japan Nikkei-Dow 12,516.14, TSE 982.93.

Base value of all indices are 100 except JSE Gold—255.7, JSE Industrial—264.3, and Australia, All Ordinary and Metals—500. NYSE All Common—50; Standard and Poors—10; and Toronto Composite and Metals—1,000. Toronto indices based 1975 and Montreal Portfolio 4/1/83. † Excluding bonds. ‡ 400 Industrials plus 40 Utilities, 40 Financials and 20 Transports. c Closed. u Unavailable.

Company Notices

BHP

THE BROKEN HILL PROPRIETARY COMPANY LIMITED

INCORPORATED IN VICTORIA

BHP HOUSE 140 WILLIAM STREET MELBOURNE AUSTRALIA 3000

NOTICE OF THE MEETING

NOTICE IS HERE\Y GIVEN than an extraordinary general meeting of the Broken Hill Proprietary Company Limited will be held In BHP House, 140 William Street, Melbourne, on Friday, 28th June, 1985 at 9.30 am.

SPECIAL BUSINESS

1. To consider and, if deemed fit, to pass the following as a special resolution:

"That the Articles of Association of the company be nltered —

(a) By inserting in Articla 61 after the words 'Twenty one days notice of any general meeting' the following:

'(and at least sixty daya notice of any general meeting at which the directors propose or these articles requira that an election of directors be held)

(b) By daleting Articla 87 and inserting In linu thereof tha following:

87. The number of directors shall be auch number not less than eight nor more than sixteen as the directors may from time to time datermine, but so that the directors shall not reduce the number of directors balow tha number In office at the time of the reduction. No company shall be appointed n director.'

(c) By dalating Articln 105 and Inserting in lieu thareof tha following:

'105(1) No person other than a retiring director ahall be aligible for alection to thn office of director nt any general meeting unless he or somn othnr mnmber Intending to propose him has, not less than forty-two nor more than fifty-six daya (but in the case of a person recommended by the directors not less than twenty-one dnya) beforn the menting left at the office of the company a notice In writing duly signed by the nomiann giving his consent to thn nomination and signifying his candidature for the office or the intention of auch mnmber to propose him.

(2) Notica of nach and nvery candidature for election to tha board of directors shall at least fourteen dnys prior to the meeting at which the alection is to taka place be forwardad to all regiatered holders of shnres.'"

2. To consider and, if deemed fit, to pass the following as n special resolution:

"That tha company opproves such of its subsidiaries na are listed on the Australian Associatnd Stock Exchanges (listed subsidiaries) introducing the amployne share plan, an outlina of which is set out in an explanatory note to thn notice of meeting, including the giving by nnch such listed subsidiary of financial assiatance to Its employees and to employees of corporations which are its subsidiaries by way of loans for the purpose of the acquisition of fully-paid shares in such llsted subsidiary In accordance with the plan."

Dated at Malbourna this 27th day of Mny, 1985.

By Order of the Board — G. D. Staphanson, Secretary.

The register of members of the company will be closed on Thursday 27th and Friday 28th, June, 1985.

Notice of Redemption

CITICORP OVERSEAS FINANCE CORPORATION N.V.

10% Guaranteed Notes due July 1, 1986

(formerly issued by Citicorp Overseas Finance Corporation Limited and assumed by Citicorp Overseas Finance Corporation N.V. on October 1, 1981)

Notice is hereby given that pursunm to provisions ef thn Fiscal Agency Agreement dated as of June 30, 1980 under which the above-mentioned notes (the "Note") were issued, Citicorp Overseas Finance Corporation N.V. (the "Company") has elected to redeem on July 1, 1985 (the "Redemption Date") all of its outstanding Notes due July 1, 1986 at a redemption price equal to the principal amount thereof plus interest accrued to the Redemption Date. On and after the Redemption Date, interest on the Notes will cease to accrue.

The Notes are to be redeemed at the main offices of Citibank, N.A. in London, Brussels, Paris, Frankfurt am Main and Amsterdam, or at the main office of Citicorp Bank (Luxembourg) S.A. in Luxembourg or at the main office of Citicorp Bank (Switzerland) in Zurich.

The Notes should be presented and surrendered at the offices set forth in the preceding paragraph on the Redemption Date with all interest coupons maturing subsequent to the Redemption Date.

Coupons due July 1, 1986 should be detached and presented for payment in the usual manner.

CITICORP DVERSTAS FINANCE CORPORATION N.V.
By: Citibank, N.A., Fiscal Agent

Mny 28, 1985

NESTLÉ S.A.,

Cham and Vevey, Switzerland

Payment of dividend

Notice is hereby given to shareholders that following a resolution passed at the General Meeting of shareholders held on 23rd May 1985, a dividend for the year 1984 will be paid to them as from 28th May 1985, as follows:

per share	SFr.	115.00
less Swiss federal withholding tax of 35%	Sfr.	40.25
net	SFr.	74.75

This dividend is payable against delivery of coupon No. 3 for all bearer shares.

On the other hand, all dividends payable on registered share certificates without coupons will be paid by bank transfer to the shareholder's account or by way of an assignment in accordance with the instructions received from the shareholder.

The dividends are payable in Swiss Francs. Outside Switzerland Paying Agents will pay against coupons and assignments in local currency at the rate of exchange prevailing on the day of presentation; bank transfers will be effected value 28th May 1985 in local currency at the rate of exchange prevailing on that date.

Coupon No. 3 and assignment may be presented as from 28th May 1985 to the following Paying Agents of the Company.

in Switzerland:
Credit Suisse, Zurich, and its branch offices,
Swiss Bank Corporation, Basle, and its branch offices,
Union Bank of Switzerland, Zurich, and its branch offices,
Swiss Volksbank, Bern, and its branch offices,
Bank Leu Ltd., Zurich, and its branch offices,
Banque Cantonale Vaudoise, Lausanne, and its branch offices and agencies,
Zürcher Kantonalbank, Zurich, and its branch offices,
Berner Kantonalbank, Bern, and its branch offices,
Zuger Kantonalbank, Zug, and its branch offices,
Banque de l'Etat de Fribourg, Fribourg and its agencies,
Darier & Cie, Geneva,
Lombard, Odier & Cie, Geneva,
Pictet & Cie, Geneva,
Handelsbank N.W., Zurich, and its branch office.

in England:
Swiss Bank Corporation, London,
Credit Suisse, London,
Union Bank of Switzerland, London.

in the United States of America:
Morgan Guaranty Trust Company of New York, New York,
Credit Susse, New York,
Swiss Bank Corporation, New York,
Union Bank of Switzerland, New York.

in France:
Crédit Commercial de France, Paris,
Banque de Paris et des Pays-Bas, Paris.

in Germany:
Dresdner Bank AG, Frankfurt/Main and Düsseldorf.

in Holland:
Pierson, Heldring & Pierson, Amsterdam.

in Austria:
Girozentrale und Bank der österreichischen Sparkassen AG, Vienna.

Cham and Vevey, 23rd May 1985

The Board of Directors

UNILAC, INC.

PANAMA

Payment of Dividend and Refund of Common Shares

Notice is hereby given to shareholders that following a resolution passed by the Board of Directors on 23rd April 1985

a dividend for the year 1984 of US$ 8.00

per common share will be paid to them as from 28th May 1985.

In addition, the general meeting of holders of founders shares of April 23rd 1985 decided

to refund the nominal value of US$ 12.00 of the common shares.

This decision was ratified by the special assembly of the holders of common shares on May 23rd 1985.

The payment of the dividend will be effected in the same way as for the Nestlé bearer or registered shares to which the Unilac shares are attached. In conformity with the Company's Articles of Incorporation, coupon No. 3 and assignment should be presented for payment at the same time as Nestlé S.A.'s dividend coupon No. 3, or the assignment, as the case may be. The refund of the common shares will be made at the same time as the payment of dividend.

At a later date the present Nestlé-Unilac twin shares will be exchanged against new Nestlé shares. The right to the refund of Unilac common shares expires in five years as of May 28th 1985.

The dividend and the refund of the common shares are payable in U.S. dollars. Outside the United States, Paying Agents will pay in local currency at the rate of exchange prevailing on the day of presentation; bank transfers shall be effected in local currency at the rate of exchange prevailing on 28th May 1985. The same procedure will be applied for the refund of the common shares.

Panama City, 23rd May 1985

The Board of Directors

COMPAGNIE DE SAINT-GOBAIN

Société Anonyme with an authorised capital of FRF 6,543,628,000
Registered Office: "Les Miroirs"
18, Avenue d'Alsace
92400 COURBEVOIE — FRANCE
RCS NANTERRE B 542 039 532

Titres Participatifs of ECU 1,000 each April 1984

ORDINARY GENERAL MEETING TO BE HELD ON 11th JUNE 1985

AGENDA

The holders of Titres Participatifs of ECU 1,000 each issued in accordance with the authorisation given by the General Meeting of shareholders of COMPAGNIE DE SAINT-GOBAIN held on 8th January, 1984 are informed that the quorum having not been reached the First Ordinary General Meeting was unable to deliberate. Therefore, the Titres Participatifs holders are called again by the Board of Directors at 11 a.m. on Tuesday 11th June 1985 at the Registered Office of the Company at "Les Miroirs" 18, Avenue d'Alsace—92400 COURBEVOIE in order to resolve on the same agenda hereunder restated:

— Board of Directors' report on the Company's activity for the fiscal year 1984

— Auditors' report on the accounts for the fiscal year 1984 and on the factors relied on to determine the remuneration of the "Titres Participatifs"

— Powers for the formalities

In order to attend the Meetings or to be represented the Titres Participatifs holders should provide an escrow receipt delivered by the depositary together with a proxy which will be held at their disposal by BANQUE NATIONALE DE PARIS (Centre d'Opérations sur Titres, Service des Transferts, 8, rue de Sofia—75018 PARIS).

THE BOARD OF DIRECTORS

NOTICE TO BONDHOLDERS

CITY OF COPENHAGEN

8¼% 1979/1991 Bonds

25,000,000 European Units of Account

Pursuant to the provisions of the Purchase Fund, notice is hereby given to Bondholders that nominal UA 258,000 have been purchased for the Purchase Fund during the twelve-month period from May 15, 1984 to May 14, 1985.

Amount outstanding: UA 16,362,000.

The Fiscal Agent
KREDIETBANK
S.A. LUXEMBOURGEOISE

May 22 1985

SHEPPARDS AND CHASE (OVERSEAS)
79 Montgomery Street,
Jersey City,
New Jersey 07302.

The British partners of Sheppards and Chase (Overseas) have retired from the partnership.

The firm will continue trading under the title of George R. Fairweather Securities Inc.

The change of name and circumstance were brought about by events appertaining to the London partnership of Sheppards and Chase and was carried out in a spirit of mutual goodwill and co-operation.

Clubs

EVE has outlived the others because of a policy of fair play and value for money. Supper from 10-3.30 am. Disco and top musicians, glamorous hostesses, exciting floorshows. 189 Regent St. 01-734 0557.

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Residential Property	8.00	27.00
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Business for Sale/Wanted	10.50	35.50
Personal	8.00	27.00
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Hotels & Travel	8.00	27.00
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For further details write to:
Classified Advertisement Manager
Financial Times
10, Cannon Street, EC4P 4BY

WORLD STOCK MARKETS

OVER-THE-COUNTER

Continued from Page 29

Stock	Sales (Hnds)	High	Low	Last	Chng

Contracts and Tenders

REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE

REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE
(Algerian Popular Democratic Republic)

MINISTERE DE L'ENERGIE ET DES INDUSTRIES CHIMIQUES ET PETROCHIMIQUES
(Ministry for Energy & Chemical & Petrochemical Industries)

ENTREPRISE NATIONALE DES TRAVAUX AUX PUITS
(National Oil Exploitation Company)

NOTICE OF NATIONAL & INTERNATIONAL CALL FOR TENDERS
NUMBER 9160.AY/DIV

The National Oil Exploitation Company is launching a National and International Call for Tenders for the supply of:

Lot No 01: SURFACE AND HEAT TREATMENT SHOP
Lot No 02: SAMPLE PREPARATION LABORATORIES
Lot No 03: MECHANICAL AND METALLOGRAPHIC TESTING LABORATORIES
Lot No 04: ANALYTICAL CHEMISTRY LABORATORIES
Lot No 05: MEASUREMENTS LABORATORIES
Lot No 06: MACHINE TOOLS
Lot No 07: RUNNING IN AND MONITORING TEST RIGS FOR:
— INTERNAL COMBUSTION ENGINES
— HEAVY DUTY CURRENT GENERATORS AND ALTERNATORS.
Lot No 08: RADIATOR AND ENGINE BLOCK DESCALING STAND

This call for tenders is intended for manufacturing companies only and excludes amalgamations, representatives of companies and any other intermediaries, in conformity with the provisions of the Law No 78-02 of 11 February 1978, with respect to State Monopoly on Foreign Trade.

Tenderers interested in this Call for Tenders may obtain the specifications from the following address:

ENTREPRISE NATIONALE DES TRAVAUX AUX PUITS (ENTP)
19 ROUTE 02 MEFTAH, OUED SMAR, EL-HARRACH
ALGIERS, ALGERIA
Direction des Approvisionnements (Supplies Division)

for the amount of 400 Algerian Dinars, with effect from the date on which this notice is published.

Offers, of which five (05) copies should be prepared, must be sent in a closed double-sealed envelope by registered mail to the Secrétariat de la Direction des Approvisionnements (Secretariat, Supplies Division) at the above address.

The outer envelope should bear no mark that might identify the tenderer, or any heading, and should read: "APPEL D'OFFRES NATIONAL ET INTERNATIONAL No 9160.AY/DIV — CONFIDENTIEL — A NE PAS OUVRIR" (NATIONAL AND INTERNATIONAL CALL FOR TENDERS No 9160.AY/DIV — CONFIDENTIAL — DO NOT OPEN).

Tenders must arrive by Saturday 18 July 1985 at the latest.

Selection will be made within 180 days of the closing date of this call for tenders.

SYRIAN ARAB REPUBLIC

PUBLIC ESTABLISHMENT OF ELECTRICITY FINANCIAL DIRECTORATE-EXTERN (CONTRACTS SECTION)

No. 1515

Date: 11/5/1985

External Call for Offers No. 1548

Following our advertisement of the call of tender No. 1548 for the execution of a Gas Turbine Power station in Sweidieh 150 MW which is mentioned in the daily official Bulletin No. 5033 dated 17th March 1985.

The closing date for presenting the offer is extended till TUESDAY, 16th July 1985.

Damascus
11th May 1985

The General Director of PEE
Eng. R. Idriss

THE MARITIME SERVICES BOARD OF N.S.W.

CONTRACT 85/86
SALE OF THE BOARD'S SINGLE BUOY MOORING AT BOTANY BAY, SYDNEY, N.S.W., AUSTRALIA

Tenders are invited for the purchase and removal of the board's single buoy mooring on an "as is where is" basis from Botany Bay, Sydney, N.S.W.

The S.B.M. was installed by I.H.C. Holland (Aust.) Pty. Ltd., in October 1971. The S.B.M. is capable of handling ships of 120,000 d.w.t. ships cargoes of crude products are received and despatched through two 305mm and two 406mm diameter pipelines arranged on the turntable. Its position is fixed by six pendants and 15.3 tonne anchors.

Tender documents may be inspected and obtained from the office of the Agent General of New South Wales, New South Wales Government Offices, New South Wales House, 66 Strand, London, WC2N 5LZ, U.K. Office hours are 9.00 a.m. to 4.30 p.m. Monday to Friday and inquiries should be directed to Mrs. P. Kemp. Tenders should be endorsed 'Contract 85/6' and addressed to The Secretary, The Maritime Services Board of N.S.W., Tender Box, First Floor, Head Office, Circular Quay West, Sydney, 2000, New South Wales, Australia.

Tenders close at 2.00 p.m. on Monday, 17th June 1985. General enquiries may be directed to the Board's Designing Engineer, Mr. P. Maunder on Telephone (0061) (02) 2402858, between the hours of 8.30 a.m. to 4.30 p.m. Monday to Friday Australian Eastern Standard Time, or by Telex, Telex number MSBSY AA24944.

NIGERIA

BAUCHI STATE AGRICULTURAL DEVELOPMENT PROGRAMME
IBRD LOAN NO.: 1981 UNI
GENERAL PROCUREMENT NOTICE — IFB 16

The Federal Government of the Republic of Nigeria has received a loan from the International Bank of Reconstruction and Development (IBRD) in various currencies equivalent to US$132,000,000 towards the cost of Bauchi State Agricultural Development Programme (BSADP). It is intended that this loan will be applied to eligible payments under the contract(s) for which this General Procurement Notice is issued.

It is the intention during 1985 to issue a Tender for the Supply of BSADP of Agricultural implements (IFB 16) comprising:

Category	Description	Quantity
1	Animal Drawn Ridgers	2,500 Nos
2	2" Petrol Pumps	1,200 Units
3	3" Petrol Pumps	1,800 Units
4	3" Diesel Pumps	216 Units

Tender documents will be available from IFB 16 from 1st May to 21st June 1985 and will be available for purchase from:
Bauchi State ADP Headquarters, PMB 90, Bauchi, Nigeria.
Bauchi State Liaison Office, Plot 1227 Ahmadu Bello Way Victoria Island, Lagos, Nigeria.
Hipro, Jacob Obrechtstraat 58, 1071 KN Amsterdam, The Netherlands Telex: 10420 (HI PRO NL)
KOU International, PO Box 189, Kings House, The Grange St Peter Port, Guernsey, CI - Telex: 4191117 (MEDSAL G)

Completed bids must be submitted in sealed envelopes to the Programme Manager, BSADP Headquarters, Bauchi on or before 24th June 1985. Bids will be opened in public at 12.00 noon, 24th June 1985.

Art Galleries

ANDREW WYLD GALLERIES, 17 Clifford Street, W1. 734 2272. Watercolours, Drawings and Oil Paintings FROM GAINSBOROUGH TO TURNER. Until 31st May, 10-6 Mon.-Fri.

BROWSE & DARBY, 19 Cork Street, London W1. 734 7984. ANTHONY EYTON, New Paintings.

LACY GALLERY, 40 Ledbury Road, W11. 229 9105. "BITTER SWEET." AN EXHIBITION of 20th CENTURY BRITISH ART. Tues 21st to Sat 25th May, 10-6.

RICHARD GREEN, 44 Dover Street, W1. 493 3939. MODERN BRITISH PAINTINGS. Daily 10-6, Sats 10-12.30.

Exhibitions

THE FINE ART & ANTIQUES FAIR, OLYMPIA, London. Over 280 leading British Dealers. May 30th Preview Day, 2 pm-9 pm (Adm. £10). May 31st-June 8th 11 am-9 pm (Adm. £2.50). Closed Sunday, 2 pm final day.

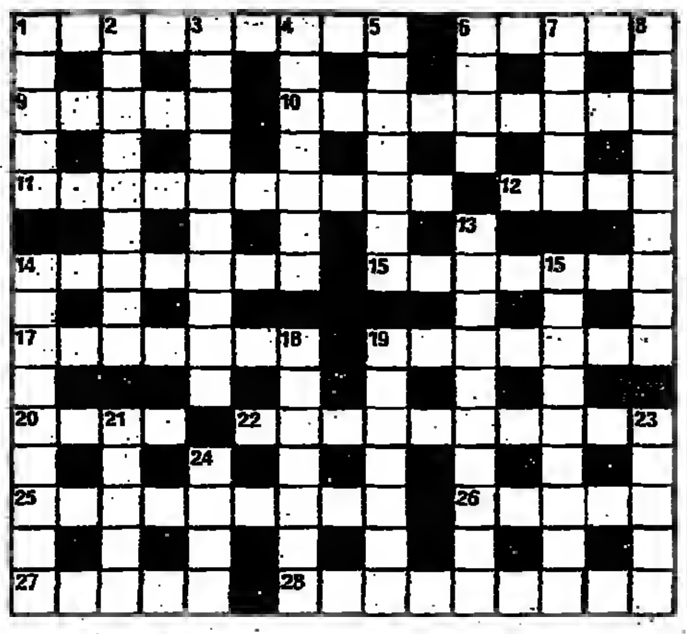
Personal

SMALL CHANNEL ISLAND REGISTERED NURSING HOME

With private ambulance service Telephone, telex and business facilities available in addition to 24-hour nursing care. For details:

Tel: (0481) 22020 or
Telex: 4191672

F.T. CROSSWORD PUZZLE No. 5,728



ACROSS

1 Tears shed possibly about certain prizes (9)
6 A little bit of spirit shown in honour (5)
9 No longer figure the Spanish are superior (5)
10 Make notes about a woman who's charming and striking (9)
11 Eve has found a friend in deputy-head: with capital (10)
12 Advanced fast (4)
14 The exterior is due to undergo renovation (7)
15 Left by accident in the church (7)
17 Cover for a hearing device (3-4)
19 Decide to tackle the problem —not for the first time! (7)
20 Reported way back (4)
22 Not favouring proposals made by the opposition (10)
25 Inexperienced band with no opportunities for development (5, 4)
26 It must be turned over before the tenth (5)
27 Races are maybe held to provide free entertainment (5)
28 Getting more confident about the right tip to hand over (9)

DOWN

1 Connection that is cutting deposit back (3-2)
2 Steps taken to move without effort (9)
3 Lay out round pounds quite unprofitably in the grand manner (10)
4 Book about verse composition (7)
5 Causing tremors in some cases — the cause is microscopic (7)
6 Get set to fire a male (4)
7 Make one and it will occupy a Parisienne (5)
8 Game, though that's of little significance (9)
13 Using one's time at home (10)
14 Management blunder (9)
16 Remaining calm, so rallied (9)
18 Operation of business backing in squeeze (7)
19 A roundabout that goes up and down (7)
21 Ernie could be the making of her! (5)
23 Always after a good man to give guidance (5)
24 Think nothing of including this bird (4)

The solution to last Saturday's prize puzzle will be published with names of winners next Saturday.

BUSINESSMAN'S DIARY

UK TRADE FAIRS AND EXHIBITIONS

May 30-June 8
Fine Art and Antiques Fair (01-385 1200) Olympia
June 3-6
International Freight Industry Conference and Exhibition—WORLDFREIGHT (01-642 7688) Met. Exhibition Hall, Brighton
June 4-6
Business Computer Show (01-643 8040) Earls Court
June 4-6
Software Show (01-643 8040) Earls Court
June 5-9
Bristol Boat Show (0272 299521) Bristol Exhibition Centre
June 9-13
Shop Equipment and Display Exhibition — SHOPEX INTERNATIONAL (01-868 4499) Olympia
June 10-14
International Mining Exhibition—MINING (0923 778311) NEC, Birmingham
June 11-15
Mexican Exhibition and Conference (01-839 6586) *Novotel, W6*
June 12-14
The Solicitors' and Legal Office Exhibition and Conference (01-995 8003) *Barbican Centre, EC2*
June 16-19
Royal Highland Show (031-333 2444) Ingliston Showgrnd, Edinburgh
July 1-3
Insurance Information Exchange—exhibition and seminar (01-631 6909) City Conference Centre, EC3
July 9-11
National Education, Training and Development Exhibition and Conference (01-637 2400) NEC, Birmingham
July 11-20
World Wine Fair (01-222 9341) Exhibition Centre, Bristol
July 14-18
Gift Trade Fair (0282 867153) Exhibition Centre, Harrogate
July 16-18
Drives, Motors, Controls Exhibition (0799 26699) *Olympia*

OVERSEAS TRADE FAIRS

Current
Brazilian Textile Industry Fair—FENIT (01-486 8686) (until May 31) Sao Paulo
May 28-31
Asian Water Technology Exhibition and Conference—AQUATECH ASIA (01-437 8404) Singapore
May 31-June 9
International Air Show (01-439 3964) Paris
May 31-June 2
International Trade Fair for Cosmetics, Health and Beauty Fair—COSMETICS (01-486 1951) Munich
June 3-6
ROBOTS 9 Conference and Exposition (U.S. (313) 271-7800) Detroit
June 10-15
International Energy Conservation Exhibition and Conference (01-968 4567) Shanghai
June 13-16
International Computer Show for Office, Home, Hobby (01-930 7251) Cologne
June 18-22
International Exhibition of Machinery and Materials for Packaging—ASIAPACK (01-683 1158) Singapore

BUSINESS CONFERENCES

May 29-31
Dataquest European Semiconductor Industry Conference—"Winds of Change" (01-353 8807) Hilton Hotel, Vienna
May 29-31
Asia/Pacific Duty-Free Conference (0737 68611) *Hyatt Central Plaza Hotel,* Bangkok
June 3-4
FT Conference: Foreign exchange risk in 1985 (01-621 1355) Hotel Inter Continental, W1
June 10-11
FT Conference: The Sixth Paper and Pulp Conference (01-621 1355) Hotel Inter Continental, W1
June 11-12
EDANA: *Italian nonwovens* symposium (Brussels 02-734. 93.10) Milan
June 11-12
FT Conference: World Gold in 1985 (01-621 1355) Lugano
June 12
Oyez: Supply, use and carriage of goods—the implications of the new dangerous substances regulations (01-236 4080) London
June 14
Management Forum: The future of the pharmaceutical market in Great Britain (0483 570099) *Cafe Royal, W1*
June 17-18
Economist Conference: Unit: Multinational corporations (01-839 7000) Park Lane Hotel, W1
June 18
B. J. O'Connor International: Japanese materials management (0932 51334) Holiday Inn, Heathrow
June 18-19
FT Conference: *World Electronics*—Global Market Approach (01-621 1355) Hotel Inter Continental, W1
June 19-20
Offshore Conferences and Exhibition: Offshore tubular joints 1985 (01-549 5831) Heathrow Penta Hotel
June 19
Business Research International: Interest rate options (01-637 4383) Park Lane Hotel, W1
June 24-25
CommEd: *Telecommunications*—the European Future (01-733 3456) Dorchester Hotel, W1
June 26
Financial and Business Exhibitions: Strategies for innovation Tara Hotel, W8
July 2
Royal Institute of International Affairs: European Initiatives in Information Technology (01-930 2233) Chatham House
July 3
London Chamber of Commerce *and* Industry: "Venezuela—an oil economy. Prospects for British suppliers" (01-248 4444) 69 Cannon Street, EC4
July 8-10
Frost and Sullivan: Development of structured software (01-486 0334) *Cumberland Hotel, London*
July 9-10
FT Conference: Oil Industry developments (01-621 1355) London
July 20
Commonwealth Institute: The Commonwealth *and the Law of* the Sea (01-603 4535) London
July 28-31
Kluwer Conferences: Marketing insurance (01-568 6441) Cookham, Berks

Anyone wishing to attend any of the above events is advised to telephone the organisers to ensure that there has been no change in the details published.

FT UNIT TRUST INFORMATION SERVICE

AUTHORISED UNIT TRUSTS

CONTINUED OVERLEAF

AUTHORISED UNIT TRUSTS & INSURANCES

Pearl Trust Managers Ltd. (a)(g)(z)
252, High Holborn, WC1V 7EB. 01-405 8441

Pearl Growth Fd.	64.2	68.3xd	-0.6	3.11
Accum Units	94.9	101.0	-0.9	3.11
Pearl Inc.	87.9	93.5	-0.8	5.01
Pearl Unit Tst.	93.9	99.9	-1.0	3.96
(Accum. Units)	156.6	166.6	-1.6	3.96

Perpetual Unit Trust Mngmt. (a) (z)
48, Hart Street, Henley on Thames. 0491 576868

Growth	182.9	196.2	....	1.47
Income	139.7	149.6	....	5.49
Worldwide Recovery	107.2	115.1	....	2.08
American Growth	58.6	62.9	....	0.67
Intl. Emerging Cos.	59.1	63.4	....	0.79
Far East Growth Fd.	50.0	50.0	....	1.00

Prolific Unit Trusts
222, Bishopsgate, EC2. 01-247 7544/7

Prolific Far East	106.3	113.9	-1.0	0.42
Prolific Extra Inc.	62.5	66.5	-0.6	5.78
Prolific Gilt Cap.	78.2	81.4xd	+0.1	3.38
Prolific High Inc.	130.7	139.0xd	-1.3	5.06
Prolific Intl.	86.5	92.7	-0.8	1.68
Prolific N. Amer.	115.7	124.0	-0.8	1.85
Prolific Spec. Sits.	149.6	159.1	-0.9	1.28
Prolific Technology	114.0	122.1	-1.5	0.83

Providence Capitol Fd. Mgrs. Ltd.
30 Uxbridge Road, London, W12 8PG. 01-749 9111

Japan Trust	48.8	51.7	-0.5	0.18
Worldwide	48.1	50.9	-0.4	1.58
European Trust	47.3	50.1		0.93
North American	51.5	54.6	-0.4	1.11
UK Equity	48.9	51.8	-0.7	3.05

Prudential Unit Trust Mngrs Ltd. (a) (b) (c)
51-59, Ilford Hill, Ilford, Essex, IG1 2DL. 01-478 3377

Prudential	325.3	346.0xd	-3.9	3.35
Holborn Gilt Tst.	146.1	153.0xd	+0.1	9.06
Holborn High Inc.	53.3	56.6	-0.2	7.87
Holborn Intl.	58.0	62.7		0.54
Holborn UK Growth	63.6	67.6	-0.3	2.31

Quilter Management Co. Ltd.
31-45 Gresham Street, EC2. 01-600 4177

Quadrant Gen. Fd.	322.4	343.0	-1.3	3.44
Quadrant Income	182.4	192.1	-0.3	6.22
Quadrant Intl. Fund	302.6	318.6xd		1.53
Quadrant Recovery	200.5	211.1	-2.0	2.73

Reed Stenhouse Inv Services Ltd
145 Borough High St, Ldn SE1 1NV 01-628 6011

Wellington Inc.	48.5	51.6	....	2.00
Wellington Growth	100.2	106.6xd	....	2.00

Reliance Unit Mgrs. Ltd.
Reliance Hse, Tunbridge Wells, Kent. 0892 22271

British Life	133.8	141.5	-1.1	4.51
Reliance Unit Tst (Inc)	86.7	92.6	-1.0	3.96
Reliance Ut Tst (Acc)	111.8	119.4	-1.3	3.96

Ridgefield Management Ltd.
39 Fountain St, Manchester M2 2AF. 061-236 5685

Income UT	94.9	101.4	-0.6	6.70
International UT	228.4	244.2	-2.9	1.00

N.M. Rothschild Asset Management
St Swithin's Lane, London EC4. 01-280 5456

NC America (Inc)	231.9	244.1	-1.9	1.37
NC America (Acc)	246.3	259.2	-2.1	1.37
NC Engy Res. Tst.	175.2	184.4	-0.8	2.23
NC Inc Fd.	328.8	346.1xd	-1.9	5.15
NC Japan Fund	114.9	120.9	-1.1	0.02
NC Smaller Cos	110.3	116.1	....	2.03
NC Smaller European	102.2	107.5	....	0.82
NC Exempt Gilt Tst*	£116.0	121.0xd	....	11.18
NC American Prop*	$11.21	11.80xd	....	—
NC Prop.*	185.8	194.8xd	....	—

*Unauthorised Unit Trusts.

Rowan Unit Trust Mngt. (a)
1 Finsbury Av, London, EC2M 2PA. 01-606 1066

American May 21	198.5	202.5	....	1.09
Securities May 21	546.0	561.0	....	2.75
High Yield May 24	131.0	134.5xd	+1.0	5.85
Merlin May 22	267.0	275.0	....	1.96
Fixed Interest	145.0	146.0	....	2.95
High Interest	117.5	118.5	....	12.54
Far East May 21	121.5	125.0	....	1.03

TSB Unit Trusts (b) (c) (y)
PO Box 3, Keens Hse, Andover, Hants, SP10 1PG
0264 62188. Dealings to 0264 63432-3

TSB American	97.9	104.2	-1.3	1.19
Do. Accum.	100.8	107.3	-1.3	1.19
TSB Extra Income	87.3	92.9	-0.3	6.03
Do. Accum.	97.1	103.4	-0.3	6.03
TSB General	119.7	127.3	-1.4	3.30
Do. Accum.	190.9	203.0	-2.3	3.30
TSB Gilt & Fxd Int.	46.0	48.0xd	+0.1	9.93
Do. Accum.	56.6	58.0	+0.1	9.93
TSB Income	160.3	170.6xd	-4.7	4.96
Do. Accum.	241.9	257.4	-1.5	4.96
TSB Pacific	108.7	115.7	-1.2	1.07
Do. Accum.	110.5	117.6	-1.3	1.07
TSB International	229.1	243.8xd	-2.0	1.89
Do. Accum.	278.6	296.7	-2.4	1.89
Natural Resources	49.4	52.6xd	-0.4	2.45
Do. Accum.	50.0	53.2	-0.4	2.45
TSB Sletd. Opps.	58.1	51.2	-0.1	2.41
Do. Accum.	51.1	55.0	-0.2	2.41

3i & Target Fund Mgrs Ltd
Target House, Gatehouse Road, Aylesbury, Bucks
Aylesbury (0296) 5941

Small Co's Fund	72.4	77.4xd	-1.5	0.10

Target Trust Mngrs. Ltd. (a)(g)
Target Hse, Gatehse. Rd, Aylesbury Bks (0296) 5941

American Eagle	68.0	72.7	-0.6	0.19
Australia	29.4	31.4	-0.4	0.10
Commodity	100.5	108.1	....	1.54
Energy	46.8	50.1	+0.3	0.66
Equity	102.2	109.0	-0.9	3.69
European Spec. Sits.	49.2	52.6	+0.4	0.99
Extra Income	89.1	95.3	+0.5	7.41
Financial	205.5	219.2	-0.4	2.91
Gilt Capital	210.0	219.9	+0.3	3.25
Gilt Income	100.2	104.9xd	+0.2	9.27
Gold Income	66.9	71.6xd	-1.3	4.00
Gold Acc.	120.9	129.3	-2.6	4.00
Income	60.2	64.7	-0.4	5.79
Investment Tst.	99.6	106.2	-0.1	1.28
Japan	44.8	46.9	-0.4	0.10
Malaysia & Singapore	27.7	29.5xd	+0.2	0.90
Pacific Income	68.4	75.2	-1.0	1.05
Pacific Re Inv	83.1	88.9	-1.3	1.05
Preference Share	15.2	16.0xd		10.54
Professional	486.1	518.5xd	-2.7	1.99
Special Sits	87.6	93.7	-0.4	1.84
Technology	42.5	45.4		0.1
U.S. Special Bond	49.3	52.7		6.31
Worldwide Capital	113.0	120.9	-1.2	1.77
Equity Exempt May 15	636.7	679.1xd	....	2.47
Equity Ex Acc May 15	1170.2	1248.2	....	2.47

Temple Bar Unit Trust Mgrs Ltd
Electra Hse, Temple Pl, Vic Emb, WC2. 836 7766

Electra Small Cos. Fd.	123.62	130.42	....	3.74
High Income	91.7	94.7xd	-0.2	7.55
North American	109.6	116.0	-1.0	0.66
Recovery	118.8	126.3	-2.0	3.92
Gilt Trust	36.7	38.0xd	..	10.03
St Vincent U.S. Grth	70.7	73.7	-0.8	0.83
St. Vincent High Inc.	67.8	69.9	-0.4	6.26

Touche, Remnant Unit Trust Mngt. Ltd.
Mermaid Hse, 2 Puddle Dock, EC4. 01-248 1250

TR American Growth	26.5	28.6	-0.1	0.31
TR General Growth	39.0	41.5	-0.4	2.47
TR Global Tech.	29.4	31.3xd	-0.3	0.10
TR Income Growth	44.5	47.9	-0.3	5.04
TR Income Monthly	39.1	41.6	....	7.41
TR Overseas Growth	34.6	36.9xd	-0.2	1.74
TR Smaller Cos.	40.7	43.4	-0.3	1.92
TR Special Ops	42.9	46.2	+0.1	1.26

Trades Union Unit Trust Managers
100, Wood Street, EC2. 01-628 8011

TUUT May 1	127.4	134.2xd	....	3.60

Transatlantic and Gen. Secs. (c) (y)
91-99, New London Rd., Chelmsford. 0245-51651

Colemco May 17	376.4	393.3	+3.7	4.19
(Accum. Units)	601.0	628.0	+6.0	4.19
Fielding Fct May 21	193.5	207.5	+2.7	3.66
(Accum. Units)	210.1	225.3	+3.0	3.66
Fielding Inc May 21	137.6	147.6	+3.5	5.18
Fielding AM&Gen May 23	207.8	220.2	+15.0	2.21
(Accum. Units)	233.6	247.6	+16.9	2.21
S&W American May 22	138.4	145.2xd	....	3.01

Manufacturers Life Insurance Co (UK)
St George's Way, Stevenage. 0438 356101

Managed	285.5	300.5	+1.9	—
Property	230.3	242.4	+0.7	—
Equity	312.3	328.7	+3.3	—
Gilt Edged	291.8	307.2	+2.0	—
Deposit	170.6	179.6	+0.5	—
Investment	130.4	137.0	+2.2	—
International	240.7	253.4	+0.3	—

Property Equity & Life Ass. Co.
Baxter Ave, Southend SS2 6QH. 0702 333438

R. Silk Prop. Bond		272.2	....	—
Int.ManCrncy.Bd.Fd.		109.6	....	—
Flexible Prop. Bd. Fd.		131.4	....	—
Flexible Money Bd. Fd.		263.9	....	—

Property Growth Assur. Co. Ltd.
Leon House, Croydon CR9 1LU. 01-680 0606

Property Fund		292.7	....	—
Property Fund (A)		282.7	....	—
Agricultural Fund		1045.7	....	—
Agric. Fund (A)		1010.7	....	—
Abbey Nat. Fund		241.3	....	—
Abbey Nat. Fd. (A)		239.7	....	—
Investment Fund		158.5	....	—
Investment Fund (A)		154.9	....	—
Equity Fund		565.3	-2.7	—
Equity Fund (A)		550.8	-2.7	—
Money Fund		243.7	+0.4	—
Money Fund (A)		238.3	+0.4	—

INSURANCES

INSURANCE, OVERSEAS & MONEY FUNDS

OFFSHORE AND OVERSEAS

World Wide Growth Management
10a, Boulevard Royal, Luxembourg

Worldwide Gth Fd	$12.68	—	..	—

Inv. Adv.: M. & G. Int. Mngt., Ltd., London.

Yamaichi Dynamic Mngt Co SA
10A Boulevard Royal, Luxembourg

Advanced Tech	$9.29	—	-0.06	—
Dynamic Gwth Fd	$9.38	—	-0.07	—

Money Market Trust Funds

	Gross	Net	Gr Equiv CAR	Int Cr
The Charities Deposit Fund 77 London Wall, London EC2N 1DB 01-588 1815				
Deposit	12.3	—	—	3-Mth
The Money Market Trust 63 Qn Victoria St, EC4N 4ST. 01-236 0952				
Call Fnd	12.54	9.38	13.92	Mth
7-day Fnd	12.68	9.48	14.08	Mth
Oppenheimer Money Management Ltd 66 Cannon St, EC4N 6AE. 01-236 1425				
Call Fnd	12.12	9.06	13.36	6-Mth
7-day Fnd	12.33	9.22	13.60	6-Mth
Dollar	6.62	—	—	6-Mth
Money Mngt. Acct.	12.00	—	—	3-Mth

Money Market Bank Accounts

	Gross	Net	Gr Equiv CAR	Int Cr
Adam & Co. plc 22 Charlotte Sq, Edinburgh, EH2 4DF 031-225 8484				
Current Acc.	12.25	8.75	13.09	Qtr
Aitken Hume 30 City Road, EC1Y 2AY. 01-638 6070				
Treasury Acc.	12.50	9.34	14.03	Qtr
Mth. Int. Chq.	12.375	9.25	14.05	Mth
Bank of Scotland 38 Threadneedle St, EC2P 2EH. 01-628 8060				
Cheque Acc.	12.05	9.00	13.40	Mth
Barclays Prime Account PO Box 125, Northampton 0604 252891				
High Int. Cheque	12.25	9.00	13.49	Qtr
Britannia Investment Services Ltd. 29 Finsbury Circus, EC2M 5QL. 01-588 2777				
Cater Allen	12.06	9.02	13.42	Mth

LONDON SHARE SERVICE

BRITISH FUNDS

"Shorts" (Lives up to Five Years)

Interest Due	Stock	Price £	Last xd	Yield Int.	Yield Red.
15Jan 15Jul	Treas 11½pc 1985	99½	10 12	11.52	12.72
3 Mar 3 Sep	Treas 8½pcCnv '85	98½	25 1	8.84	12.45
22 May 22 Nov	Exch 12½pc 1985	100	15.4	12.25	12.12
25 Aug 25 Feb	Exch 11½pc '86	99⅞	21 1	11.77	11.81
11Oct 11Apr	Treas 10pcCnv 1986	98½	5.3	10.15	11.82
19 Nov 19 May	Treas 3pc 1986	94½	12.4	3.18	9.15
19 Nov 19 Mar	Exch 10½pc Cv '86	98½	12 4	10.61	11.67
12Dec 12Jun	Treas 12pc 1986	100½	7.5	11.96	11.64
10 Jan 10 Jul	Treas 8½pc 1984-86	97	4 12	8.76	11.48
29 Apr 29 Oct	Exch 14pc 1986	103	25.3	13.59	11.60

Five to Fifteen Years

Over Fifteen Years

Undated

Index-Linked

INT. BANK AND O'SEAS GOVT STERLING ISSUES

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Public Board and Ind.

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O.F.S.

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Miscellaneous

—	♥Colby Res Corp.	80	—	—	—	—
Aug. Feb	Cons. Murch. 10c	450	14.1	†Q100c	1.4	10.8
—	✦Ennex Int. Ir10p	34	—	—	—	—
Sept Feb	Hampton Areas 10p	190	24.12	3.75	2.1	2.6
—	♥Highwood Res.	170	—	—	—	—
May Aug	Homestake Mining $1	£20xd	22.5	Q20c	—	—
—	♥McFinley Red Lake	255	—	—	—	—
—	♥Musto Explorations	275	—	—	—	—
—	♥New Sabina Res C$1	45	—	—	—	—
October	Northgate C$1	310	9/77	—	—	—
Jan. July	RTZ	608xd	13.5	20.0	2.7	4.7
Jan July	Do. 9½pcLn '95-2000	£131½xd	13.5	Q9½%	14.0	†7.4
—	♥Tara Expln $1	£13½	—	—	—	—

NOTES

Unless otherwise indicated, prices and net dividends are in pence and denominations are 25p. Estimated price/earnings ratios and covers are based on latest annual reports and accounts and, where possible, are updated on half-yearly figures. P/Es are calculated on "net" distribution basis, earnings per share being computed on profit after taxation and unrelieved ACT where applicable; bracketed figures indicate 10 per cent or more difference if calculated on "nil" distribution. Covers are based on "maximum" distribution; this compares gross dividend costs to profit after taxation, excluding exceptional profits/losses but including estimated extent of offsettable ACT. Yields are based on middle prices, are gross, adjusted to ACT at 30 per cent and allow for value of declared distribution and rights.

- ● "Tap Stock".
- * Highs and Lows marked thus have been adjusted to allow for rights issues for cash.
- † Interim since increased or resumed.
- ‡ Interim since reduced, passed or deferred.
- ‡‡ Tax-free to non-residents on application.
- ♦ Figures or report awaited.
- ♥ Not officially UK listed; dealings permitted under Rule 535(4)(a).
- ✦ USM; not listed on Stock Exchange and company not subjected to same degree of regulation as listed securities.
- †† Dealt in under Rule 535(3).
- ¢ Price at time of suspension.
- ¶ Indicated dividend after pending scrip and/or rights issue: cover relates to previous dividend or forecast.
- ♦ Merger bid or reorganisation in progress.
- ♣ Not comparable.
- ♠ Same interim: reduced final and/or reduced earnings indicated.
- ¢ Forecast dividend; cover on earnings updated by latest interim statement.
- ‡ Cover allows for conversion of shares not now ranking for dividends or ranking only for restricted dividend.
- ★ Cover does not allow for shares which may also rank for dividend at a future date. No P/E ratio usually provided.
- ¥ No par value.

B.Fr. Belgian Francs. Fr. French Francs. ♦♦ Yield based on assumption Treasury Bill Rate stays unchanged until maturity of stock. a Tax free. b Figures based on prospectus or other offer estimate. c Cents. d Dividend rate paid or payable on part of capital, cover based on dividend on full capital. e Redemption yield. f Flat yield. g Assumed dividend and yield. h Assumed dividend and yield after scrip issue. j Payment from capital sources. k Kenya. m Interim higher than previous total. n Rights issue pending. q Earnings based on preliminary figures. s Dividend and yield exclude a special payment. t Indicated dividend: cover relates to previous dividend, P/E ratio based on latest annual earnings. u Forecast dividend: cover based on previous year's earnings. v Subject to local tax. x Dividend cover in excess of 100 times. y Dividend and yield based on merger terms. z Dividend and yield include a special payment: Cover does not apply to special payment. A Net dividend and yield. B Preference dividend passed or deferred. C Canadian. E Tender price. F Dividend and yield based on prospectus or other official estimates for 1984-85. G Assumed dividend and yield after pending scrip and/or rights issue. H Dividend and yield based on prospectus or other official estimates for 1984. K Figures based on prospectus or official estimates for 1984. M Dividend and yield based on prospectus or other official estimates for 1985-86. N Dividend and yield based on prospectus or other official estimates for 1985. P Figures based on prospectus or other official estimates for 1983. R Gross. T Figures assumed. Z Dividend total to date.

Abbreviations: xd ex dividend; xc ex scrip issue; xr ex rights; xa ex all; xd ex capital distribution.

REGIONAL & IRISH STOCKS

The following is a selection of Regional and Irish stocks, the latter being quoted in Irish currency.

Albany Inv 20p	100	......	Arnott	160xd	......
Craig & Rose £1	£9	......	CPI Hldgs	50	......
Finlay Pkg. 5p	59xd	......	Carrol Inds.	125	+3
Higsons Brew	177¢	......	Dublin Gas	53	......
Holt (Jos) 25p	740xd	......	Hall (R. & H.)	55	......
IoM Stm. £1	87	......	Heiton Hldgs.	28	......
IRISH			Irish Ropes	43	......
Fund 11¾% 1988	£96¾	+¼	Jacob (W. & R.)	76xd	......
Nat. 9¾% 84/89	£90½	......	Unidare	83	......
Fin. 13% 97/02	£99⅞	......			

OPTIONS —3-month call rates

Industrials	p				
Allied-Lyons	16	GKN	17	Turner Newall	18
BAT	32	Hanson Tst.	17½	Unilever	85
BOC Grp.	25	Hawker Sidd	38	Vickers	19
BSR	16	Hse of Fraser	38	**Property**	
BTR	52	ICI	60	Brit Land	12
Babcock	14	"Imps"	18	Cap Counties	18
Barclays	48	Jaguar	28	Land Secs	25
Beecham	32	Ladbroke	24	MEPC	28
Blue Circle	45	Legal & Gen	58	Peachey	22
Boots	15	Lex Service	28	Samuel Props	18
Bowaters	28	Lloyds Bank	45	**Oils**	
Brit Aerospace	33	Lucas Inds	25	Brit. Oil & Min	4
Brit. Telecom	31	Marks & Spcr	11	Brit Petroleum	42
Brown (J.)	3	Midland Bk	30	Burmah Oil	10
Burton Ord	39	NEI	8	Charterhall	6
Cadburys	14	Nat West Bk	60	Premier	5
Comm Union	19	P & O Dfd	36	Shell	60
Courtaulds	12½	Plessey	17	Tricentrol	18
Debenhams	17½	Polly Peck	26	Ultramar	29
Distillers	28	Racal Elect	18	**Mines**	
Dunlop	6	RHM	11	Charter Cons	18
FNFC	8½	Rank Org Ord	32	Cons Gold	44
Gen Accident	45	Reed Intnl	50	Lonrho	34
Gen Electric	17	Sears	N	Rio T Zinc	56
Glaxo	85	TI	28		
Grand Met	25	Tesco	28		
GUS 'A'	60	Thorn EMI	35		
Guardian	60	Trust Houses	13		

A selection of Options traded is given on the London Stock Exchange Report page.

"Recent Issues" and "Rights" Page 18

This service is available to every Company dealt in on Stock Exchanges throughout the United Kingdom for a fee of £800 per annum for each security.

CURRENCIES; MONEY and CAPITAL MARKETS

FOREIGN EXCHANGES

Dollar sits on the fence

BY JONAS CROSLAND

LAST week was not the best time to view the foreign exchange market and make eny long-term assessment about currency movements. The oearness of long weekend combined with technicel distortions commonly seen towards the end of the month effectively ruled out too much sensible analysis.

Many were quick to point out that the dollar's various gyrations were the product of statements made from time to time covering economic and moeelary growth. There was reason to belleve however that the reveree mey bave been nearer the truth eince there was sufficient conflicting loformotion to moke o case for the dollar going anywhere.

At the etart of the week most people were busy stressing the importance of final first quarter U.S. GNP figures due for release on Tuesday end theo spent the rest of the week explaining wby the dollar went its own sweet way in complete defiance of economic data that the market ot the moment seems to place at the top of its list of important statistics.

Apparently a rise of 0.7 per cent after a revised flosh estimote of 1.3 per ceot ond compared with a flash estimate of 2.1 per cent and a fine) fourth quarter of 4.3 per cent was not enough to cause upset.

This was oot because the figures were beolthy (they were dreadful) but beceuse the market had already lotched on to bopes of an upturn in the second quarter with a full month to go even before the flash estimate.

This scenario was neatly torpedoed by Mr James Baker, U.S. Treasury Secretary, when he suggested that the second quarter was not going to be very pretty either. He did, bowever, offer the morket a lifelioe by otressing that the second helf of this year was likely to aee a significant rebound

Other economic todicators tend to beor out Mr Boker's assessmeot

STERLING INDEX

	May 24	Previous
8.30 am	79.4	78.9
9.00 am	79.4	78.9
10.00 am	79.4	79.0
11.00 am	79.4	79.0
Noon	79.3	79.0
1.00 pm	79.0	79.0
2.00 pm	79.1	79.0
3.00 pm	79.0	79.0
4.00 pm	79.1	78.9

£ IN NEW YORK

	May 24	Prev. close
£ Spot	$1.2540-1.2560	$1.2575-1.2690
1 month	0.51-0.48 pm	0.51-0.50 pm
3 months	1.40-1.39 pm	1.40-1.37 pm
12 months	3.65-5.58 pm	5.55-3.60 pm

Forward premiums and discounts apply to the U.S. dollar

FORWARD RATES AGAINST STERLING

	Spot	1-month	3-month	6-month	12-month
Dollar	1.2600	1.2551	1.2460	1.2358	1.2238
D-Mark	3.89	3.8677	3.8244	3.7662	3.6730
French Franc	11.8725	11.8490	11.8035	11.7609	11.7350
Swiss Franc	3.2775	3.2579	3.2799	3.1664	3.0742
Japanese Yen	316.50	314.85	311.65	307.45	300.58

POUND SPOT—FORWARD AGAINST POUND

May 24	Day's spread	Close	One month	% p.a.	Three months	% p.a.
U.S.	1.2540-1.2710	1.2595-1.2605	0.51-0.48c pm	4.71	1.42-1.38pm	4.44
Canada	1.7250-1.7410	1.7250-1.7300	0.44-0.36c pm	2.74	1.26-1.13pm	2.77
Nethlnd.	4.37½-4.40½	4.38¾-4.39¾	2-1¾c pm	5.12	6-5¾pm	5.29
Belgium	78.01-78.84	78.25-78.35	27-22c pm	3.75	71-62pm	3.40
Denmark	13.939-14.0065	13.94½-13.97½	4½-3½ore pm	3.33	11½-10½pm	2.15
Ireland	1.2407-1.2484	1.2445-1.2455	0.12p pm-0.05 dis	0.34	0.37pm-0.03dis	0.69
W. Ger.	2.88-3.90¾	2.88½-3.89½	2½-2¼pf pm	6.94	6¾-6½pm	9.75
Portugal	219-225¾	219-223	165-555c dis	−16.55	325-1225dis	14.08
Spain	219¼-220¼	218¾-219¾	5c pm-25 dis	−0.55	20-80dis	−0.91
Italy	2470-2492	2490-2491	1-4lire dis	−1.20	5-8dis	−1.04
Norway	11.15-11.23¼	11.15-11.19	½ore pm-½ dis	0.13	½-¾dis	−0.22
France	11.80-11.90¾	11.86¾-11.87¾	2½-2c pm	2.34	7-6¼pm	2.23
Sweden	11.22-11.3040	11.22-11.25¾	3-3¾ore dis	−3.54	6½-9½dis	−3.40
Japan	314.85-318.65	316-317	1.74-1.64y pm	9.41	4.97-4.84pm	6.20
Austria	27.30-27.44	27.30-27.36	14¾-12½gro pm	5.87	40¾-36½pm	5.62
Switz.	3.26¾-3.29	3.27¾-3.28¾	2½-1½c pm	7.32	65¾pm	7.09

Belgian rate is for convertible francs. Financial franc 79.00-79.10. Six-month forward dollar 2.45-2.40c pm, 21-month 3.70-2.55c pm.

OTHER CURRENCIES

May 24	£	$		£ Note Rates
Argentine Peso	693.91-689.77	559.04-559.54	Austria	27.25-27.50
Australia Dollar	1.8475-1.8519	1.4650-1.4675	Belgium	78.40-79.06
Brazil Cruzeiro	6,700-6,730	5,3_0-6,350	Denmark	13.95-14.09
Finland Markka	8.0750-8.1160	6.4180-6.4200	France	11.84-11.05
Greek Drachma	1.7029-173.93	134.24-137.06	Germany	3.88-3.08
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Selling rate.

EMS EUROPEAN CURRENCY UNIT RATES

	Ecu central rates	Currency amounts against Ecu May 24	% change from central rate	% change adjusted for divergence	Divergence limit %
Belgian franc	44.9008	45.1330	+0.52	+0.41	±1.5471
Danish krone	8.14104	8.04978	−1.12	−1.03	±1.6410
German D-mark	2.24184	2.24209	+0.01	+0.10	±1.1476
French franc	6.87456	6.83912	−0.52	−0.43	±1.3689
Dutch guilder	2.52595	2.53026	+0.17	+0.26	±1.5171
Irish punt	0.72569	0.716579	−1.28	−1.27	±1.6673
Italian lira	1403.49	1,430.72	+1.94	+1.94	±4.0410

Changes are for Ecu, therefore positive change denotes a week currency. Adjustment calculated by Financial Times.

BANK OF ENGLAND TREASURY BILL TENDER

	May 24	May 17		May 24	May 17
Bills on offer	£100m	£100m	Top Accepted rate of discount	11.9397%	12.0129%
Total of applications	£409.36m	£467.37m	Average rate of discount	11.9017%	11.9939%
Total allocated	£100m	£100m	Average yield	12.99%	12.37%
Minimum accepted bid	£97.025	£97.005	Amount on offer at next tender	£100m	£100m
Allotment at minimum level	[illegible]	[illegible]			

DOLLAR SPOT—FORWARD AGAINST DOLLAR

[illegible]

† UK and Ireland are quoted in U.S. currency. Forward premiums and discounts apply to the U.S. dollar and not to the individual currency. Belgian rate is for convertible francs. Financial franc 62.80-62.90.

CURRENCY MOVEMENTS

May 24	Bank of England Index	Morgan Guaranty Change %
Sterling	79.1	−10.5
U.S. dollar	146.0	+31.5
Canadian dollar	87.5	−7.9
Austrian schilling	111.2	+4.0
Belgian franc	89.2	−10.2
Danish Kroner	77.3	−5.5
Deutsche mark	121.5	+0.3
Swiss franc	138.1	+7.9
Guilder	119.0	+9.8
French franc	64.8	−10.7
Lira	46.3	−16.7
Yen	155.0	+11.3

Morgan Guaranty changes: average 1980-1982=100. Bank of England index (base average 1975=100).

CURRENCY RATES

May 24	Bank rate %	Special Drawing Rights	European Currency Unit
[illegible]			
Danish Kr.	7	10.9605	8.04978
Dmark	4½	3.06119	2.24209
Guilder	5	3.48811	2.53026
French Fr.	9½	9.34336	6.83912
Lira	16½	1957.01	1430.72
Yen	5	249.081	182.989
Norway Kr.	8	8.80745	6.44185
Span'h Pta.	—	173.008	126.789
Swedish Kr.	11.5	8.84358	6.48368
Swiss Fr.	4	2.57421	1.88489
Greek Dr'ch	20½	136.026	99.8720
Irish Punt	13¾	0.980109	0.716579

CS/SDR rate for May 23: 1.35936.

EXCHANGE CROSS RATES

May 24	Pound St'rling	U.S. Dollar	Deutschem'k	J'panese Yen	French Franc	Swiss Franc	Dutch Guild.	Italian Lira	Canada Dollar	Belgian Franc
Pound Sterling	1.	1.260	3.890	319.6	11.87	3.278	4.383	2491.	1.799	78.30
U.S. Dollar	0.794	1.	3.090	251.1	9.430	2.606	3.494	1978.	1.371	62.35
Deutschemark	0.257	0.324	1.	81.86	3.052	0.843	1.129	640.2	0.444	20.13
Japanese Yen 1,000	3.168	3.981	12.29	1000.	37.51	10.36	13.88	7869.	5.458	247.4
French Franc 10	0.840	1.061	3.276	26.66	10.	2.791	3.700	2098.	1.455	65.96
Swiss Franc	0.305	0.384	1.187	96.07	3.098	1.	1.340	759.2	0.527	23.89
Dutch Guilder	0.228	0.287	0.880	70.06	2.703	0.746	1.	567.0	0.393	17.83
Italian Lira 1000	0.409	0.506	1.562	127.1	4.767	1.316	1.764	1000.	0.694	31.44
Canadian Dollar	0.079	0.762	2.259	183.2	6.873	1.807	2.643	1442.	1.	45.33
Belgian Franc 100	1.277	1.609	4.968	404.2	15.10	4.186	5.610	3191.	2.206	100.

EURO-CURRENCY INTEREST RATES (Market closing rates)

May 24	Sterling	U.S. Dollar	Canadian Dollar	Dutch Guilder	Swiss Franc	D-mark	French Franc	Italian Lira	Belgian Franc Conv.	Belgian Franc Fin.	Yen	Danish Krone
Short-term	12⅝-12¾	7⅝-7¾	9-9¼	7½-7¾	1½-1¾	5¾-6	10⅛-10⅜	11⅛-13	9¼-9½	9¼-9½	6⅛-6⅜	2¼-2¾
7 days' notice	12⅝-12¾	7⅝-7¾	9¼-9⅝	7⅛-7⅜	14¼-14¾	5⅜-5⅝	10⅛-10⅜	11½-13	9⅜-9⅝	9½-9¾	6¼-6⅜	9¼-9¾
Month	12⅝-12¾	7¾-7⅞	9⅜-9⅝	7-7⅛	6⅛-6⅜	5⅝-5¾	10⅛-10¼	13⅛-13⅜	9⅞-9⅛	9⅞-10⅛	6¼-6⅜	9-9½
Three months	12⅞-13⅛	7⅞-8	9⅜-9⅝	6⅞-7⅛	5⅛-5⅜	5⅝-5¾	10⅛-10⅜	13-13⅛	9-9¼	9-9¼	6⅛-6⅜	9⅞-9⅜
Six months	12⅝-13⅛	9⅛-8⅜	9⅛-9⅜	6⅞-7	5¼-5⅜	5⅝-5¾	10⅛-10⅜	13¼-13⅝	9⅛-9⅜	9⅛-9⅝	6¼-6⅜	9-9½
One year	12⅛-13¼	9⅜-9⅝	9¾-10	6⅞-7	5⅛-5⅜	5¾-6⅞	10⅝-10⅞	14-14¾	9⅜-9⅝	9⅜-9⅝	6⅛-6⅜	9⅛-9⅞

Asian $ (closing rates in Singapore): Short-term 7¾-7⅞ per cent; seven days 7¾-7⅞ per cent; one month 7¾-7⅞ per cent; three months 7⅞-8⅛ per cent; six months 8⅛-8⅜ per cent; one year 9⅛-8⅞ per cent. Long-term Eurodollars: two years 9⅞-9⅞ per cent; three years 10¼-10⅜ per cent; four years 10½-10¾ per cent; five years 10¾-11 per cent nominal. Short-term rates are call for U.S. dollars and Japanese yen; others two days' notice.

FINANCIAL FUTURES

[illegible]

WEEKLY CHANGE IN WORLD INTEREST RATES

[illegible]

MONEY MARKETS

Settling down for a quiet time

There was little io last week's money market to mar the enjoymeot of a three-day weekend. With the exceptioo of having to find a forecast total shortage of £5bn, there was not very much to cause excitement. Sterling finished little changed on the week as did most domestic interest rates.

Perhaps the highlight of the week was the submission giveo to a committee of MPs by Mr Tony Coleby, assistant director of the Bank of England. In stressing thet the Bank is likely to be somewhat reserved about lower interest rates before money supply figures improve, he was not saying anything that the market did not already know.

UK clearing banks base lending rate 12½-12¾ per cent since April 19

But the occasion marked the clearest indication so far of the Bank's official attituda and eliminated any lingering hopes of an early or significant cut in base rates.

External factors were also a little thio on the ground. The recent reduction in the U.S. discount rate to 7½ per cent was obviously welcomed although it appeared to have no effect on the streogth of the dollar with domestic performance as measured by GNP figures currently holding the vogue.

For the time being there is little to cause concern but a continued decline in U.S. rates would certainly put pressure on the UK authorities to alter domestic rates to offset external forces. The alternativa is less palatable with sterling showing what some already regard as an unhealthy improvemeot against the D-mark, recently touching a 15-month bigh.

Bearing all this in mind, it seems, however, that little is likely to bappen over the next mooth or so. In addition some independent sources have suggested that UK inflation is likely to rise a little further before it settles back.

If this is the case the temptatioo to take an early summer holiday may prove irresistible to some.

MONEY RATES

May 24	Frankfurt	Paris	Zurich	Amst'dam	Tokyo	Milan	Brussels	Dublin
Overnight	5.85-5.96	10⅛	1⅝-1⅞	7⅛-7⅜	3.03190	14⅞-15¼	6-55	12¾-13
One month	5.60-5.75	10⅛-10¼	5¼-5⅜	7⅛-7⅜	6.34375	14⅛-14⅛	8⅞-9⅛	12¼-12¾
Two months	5.60-5.73	10⅛-10⅜	—	—	—	—	—	12⅝-12¾
Three months	5.65-5.80	10⅛-10⅜	5¼-5⅝	6⅞-7	6.34375	14¾-15⅛	9-9¼	12¾-12⅝
Six months	5.70-5.83	10⅛-10⅜	—	6⅞-6⅞	—	—	9-9⅛	12½-12¾
Lombard	6.0	—	—	—	—	—	—	—
Intervention	—	10⅛	—	5⅞	—	—	—	—

LONDON MONEY RATES

Discount Houses Deposit and Bill Rates

May 24 1985	Sterling Certificate of deposit	Interbank	Local Authority deposits	Company Deposits	Market Deposits	Treasury (Buy)	Treasury (Sell)	Eligible Bank (Buy)	Eligible Bank (Sell)	Fine Trade (Buy)
Overnight	—	2-13	12⅝-12¾	11-10⅞	12½-12⅝	—	—	—	—	—
2 days notice	—	—	12⅝-12¾	—	—	—	—	—	—	—
7 days or	—	—	—	—	—	—	—	—	—	—
7 days notice	—	12⅝-12¾	12⅝-12¾	12⅞	12½	—	—	—	—	—
One month	12⅝-12⅝	12⅝-12¾	12⅝	—	12⅞	12⅜	[illegible]	[illegible]	[illegible]	[illegible]
Two months	12⅝-12⅝	12⅝-12¾	12⅝	—	12¼	12⅞	[illegible]	[illegible]	[illegible]	[illegible]
Three months	12⅝-12⅝	12⅝-12⅝	12⅝	—	12⅛	11⅞	[illegible]	[illegible]	[illegible]	[illegible]
Six months	12⅝-12⅝	12⅝-12½	12⅝	—	—	—	[illegible]	[illegible]	[illegible]	[illegible]
Nine months	12¼-10	12⅝-12⅝	—	—	—	—	[illegible]	[illegible]	[illegible]	[illegible]
One year	10-11	12⅛-12¼	12⅛	—	—	—	[illegible]	[illegible]	[illegible]	[illegible]

	Local Auth. negotiable bonds	Local Authority Deposits	Finance House Deposits	$ Cert of Deposits	SDR Linked Deposits	ECU Linked Deposits
One month	12⅞-12⅝	—	12½	7.65-7.75	7¾-8	2¼-2⅝
Two months	12⅞-12⅝	—	12⅝	7.7-7.8	7⅞-8⅛	9⅛-9⅜
Three months	12⅞-12⅝	—	12⅝	7.8-7.9	7⅞-8⅛	9⅛-9⅜
Six months	12¾-12½	—	12⅞	8.0-8.1	8⅛-8⅜	9⅛-9⅜
Nine months	12⅝-12⅝	—	12¼	8.3-8.4	—	—
One year	12½-12¼	—	12⅞	8.5-8.6	8⅛-8⅜	9⅛-9⅜
Two years	—	11¾	—	—	—	—
Three years	—	11⅝	—	—	—	—
Four years	—	11⅝	—	—	—	—
Five years	—	11⅝	—	—	—	—

ECGD Fixed Rate Export Finance IV: Average Rate of Interest period April 3 to May 7 (inclusive): 12.787 per cent. Local authorities and finance houses seven days' notice, others seven days' fixed. Finance Houses Base Rate [illegible]

FT LONDON INTERBANK FIXING

(11.00 a.m. May 24) 3 months U.S. dollars	
bid 7 15/16	offer 8 1/16
6 months U.S. dollars	
bid 8 1/4	offer 8 3/8

The fixing rates are the arithmetic means, rounded to the nearest one sixteenth, of the bid and offered rates for $10m quoted by the market to five reference banks at 11 am each working day. The banks are National Westminster Bank, Bank of Tokyo, Deutsche Bank, Banque Nationale de Paris and Morgan Guaranty Trust.

MONEY RATES

NEW YORK (4 pm)

[illegible]

£ WORLD VALUE OF THE POUND

The table below gives the latest available rate of exchange for the pound against various currencies on May 24, 1985. In some cases rate is nominal. Market rates are the average of buying and selling rates except where they are shown to be otherwise. In some cases market rates have been calculated from those of foreign currencies to which they are tied.

Abbreviations: (A) approximate rate, no direct quotation available; (F) free rate; (P) based on U.S. dollar parities and going sterling-dollar rates; (T) tourist rate; (Bas) basic rate; (bg) buying rate; (Bk) bankers' rates; (cm) commercial rate; (ch) convertible rate; (fn) financial rate; (exC) exchange certificate rate; (nc) non commercial rate; (nom) nominal; (o) official rate; (sg) selling rate; (c) controlled rate; (u) unified rate.

COUNTRY	CURRENCY	VALUE OF £ STERLING
Afghanistan	Afghani	99.00
Albania	Lek	20.0588
Algeria	Dinar	6.46
Andorra	French Franc	11.8725
	Spanish Peseta	212.20
Angola	Kwanza	37.3255
Antigua	E. Caribbean $	3.41
Argentina	New Peso	694.51
[illegible]	[illegible]	[illegible]
Greenland	Danish Kroner	13.9675
Grenada	E. Caribbean $	3.41
Guadaloupe	Local Franc	11.8725
Guam	U.S. $	1.2600
Guatemala	Quetzal	1.2600
Guinea	Syli	31.34
Guinea-Bissau	Peso	196.00
Guyana	Guyanese $	5.2015
[illegible]	[illegible]	[illegible]
Peru	Sol	exc(A)11,823.91
Philippines	Philippine Peso	23.05
Pitcairn Islands	£ Sterling	—
	New Zealand $	2.7920
Poland	Zloty	172.46
Portugal	Portuguese Escudo	221.00
Puerto Rico	U.S. $	1.2600
[illegible]	[illegible]	[illegible]

FINANCIAL TIMES SURVEY

AEROSPACE

ACTIVITY in the world's aerospace industries remains buoyant, with civil aviation business now improving, alongside the continued high level of demand for military aircraft and guided weapons. Space business is expanding more slowly. As a result, total aerospace business worldwide by the end of the century could amount to as much as $1,000bn.

A British Aerospace concept of how the projected European Fighter Aircraft (EFA) may look. Plans for this multi-billion pound venture, which would be Western Europe's biggest military aircraft project after the Tornado, are now under discussion between the UK, France, West Germany, Italy and Spain

By Michael Donne
Aerospace Correspondent

THE WORLD'S aerospace industries go to this year's Paris International Air Show conscious that they are on the verge of a new era of expansion which, although marked by a fierce intensification of competition across the entire spectrum of activities, should keep them busy well into the 1990s, if not into the next century.

Estimates of the future markets for civil and military aircraft, engines, guided weapons and spacecraft of all kinds vary widely, but overall it is believed that world aerospace turnover through the next 10 to 15 years is not likely to be less than $1,000bn, and could be considerably more.

Civil airliner markets alone will account for well over $200bn of new business, while the military aircraft market will remain exceptionally strong, with estimates of well over $300bn of sales over tho next decade alone.

If to these figures are added the continued high level of demand for guided weapons, and the massivo potential spending on space activities—satellites of all kinds, and continued spending on the Space Shuttle, the Ariane launcher and the projected U.S. Manned Space Station—the $1,000bn level of aerospace world-wide business is likely easily to be reached, if not exceeded.

In commercial aviation, following the end of the recession, with the resultant improvement in airlines' fortunes, demand for civil aircraft is recovering, albeit slowly. It is in this sector that the intensification of competition is most readily discernible.

Demand is picking up in the U.S., where the airlines appear to have passed, at least for tho present, tho worst of their financial difficulties. Elsewhere, especially in Western Europe, efforts to cut costs by trimming labour forces, and by axeing uneconomic fleets and other assets, has resulted in many cases in slimmer, tougher airlines more capable of meeting market conditions.

Some major airlino re-equipment programmes are now looming in the U.S. Western Europe and elsewhere, especially in South-East Asia, primarily to meet the requirements of expanding traffic, but also for tho replacement of existing ageing and increasingly environmentally unacceptable fleets.

The battle for world airliner markets between Airbus Industrie of Europe and Boeing of the U.S. could take some dramatic new turns in the not too distant future, both as a result of changing technologies in aerospace—the emergence of the *prop-fan concept — for* example, but also as a result of changes in top management at both companies. The era of M Bernard Lathiere, president of Airbus for many years, has given way to the quieter but no less tough management stylo of M Jean Pierson, who ran the aircraft side of France's Aerospatiale. At Boeing, there are also new presideots, both at the group level with Mr Frank Shrontz, and at the commercial airplane company level with Mr Dean Thornton.

Already, aerospace observers detect a determination at Boeing to fight back ever more vigorously against the Airbus inroads on world airliner markets, and this could be reflected in the pattern of orders over the next year or two.

All the major airliner builders are confident that massive markets lie ahead.

Airbus Industrie, which has already captured a major slice of the world market at the expense of Boeing over recent years, estimates that there will be some 9,100 new airliners needed during the next 20 years, to satisfy both traffic growth and replace existing ageing types, worth in all more than $500bn.

Since the current world airliner fleet totals some 5,700 aircraft, this implies that the world's airlines will be using almost twice as many aircraft in the year 2005, to cater for increased traffic.

The Airbus analysis further suggests that the bulk of the market will fall in the 100-180 seat short-to-medium range category (more than 4,150 aircraft), with some 3,650 aircraft in the larger twin-aisle 200-600 seat short-to-medium range category, and nearly 1,300 long-range aircraft.

In terms of market share, Airbus believes it can win orders for some 2,800 airliners in all categories, worth some $132bn, of which the majority will be in the short-to-medium range single-aisle market with aircraft like the A-320.

But it is also now setting its sights on the long-range market, with such projected ventures as the TA-11 four-engined aircraft of 200-250 seats, designed for long routes where traffic densities do not justify bigger, higher-capacity equipment.

Boeing's forecasts do not look as far ahead as those of Airbus, with a sales value of some $135bn for the Western world's manufacturers as a whole by 1995, for airliners of 130 seats and upwards. It believes this could amount to somo 4,000 new aircraft, but it does not reveal what it believes its own share of the market might be.

Nevertheless, it argues that with its current (and projected) product line, it is well positioned to compete effectively in all market sectors.

Boeing has made it clear that it believes that by delaying its own entry into the big 150-seater airliner market until 1992, against Airbus Industrie's plan to put the A-320 into service by 1989, it is not falling behind, but rather making a major leap forward in technology that will force Airbus to change its own design plans.

Whether this is so remains to be seen, but it is already obvious that competition between these two major protagonists will intensify in the years immediately ahead.

British Aerospace estimates that, in the small airliner sector of the market—that is for aircraft in the "commuter," "regional" and "local service" arena, seating variously from 12 to 130 seats—the market up to the end of the century is likely to amount to some 5,500 aircraft, worth more than $42bn.

At the same time, British Aerospace estimates the market for business aircraft—that is, small aircraft of all kinds used by companies for their own purposes—over the next decade is likely to amount to more than 10,000 aircraft, worth about $38.5bn. Of that total, abont 4,300 aircraft will be jets, and tho rest turbo-propeller aircraft, with the majority, about 7,500, being sold in the U.S.

BAe is active in both arenas, with its Type 748, Jetstream 31, and Advanced Turboprop (ATP) and Type 146 in the regional and commuter airliner market, and the 125 in the business jet market.

Even allowing for the variations in different manufacturers' forecasts, therefore, it is clear that the civil aircraft market alono through to the end of this century is likely to amount to several hundred billions of dollars, covering many thousands of aircraft of all kinds.

In military aviation, the overall level of world markets is currently running at about $30bn a year, mainly for tactical combat aircraft of all kinds, with many countries now embarking upon projects of their own.

In Western Europe, there is the possibility of a new European Fighter Aircraft (EFA) programme that will bring together the skills of several countries. But even if such a venture fails to materialise, there is the alternative of smaller national programmes, with the UK already undertaking its own Experimental Aircraft Programme (EAP) as a "technology demonstrator" for an eventual wider European programme, while Dassault-Breguet in France is working on its own Avion de Combat Experimental (ACX) now called the Rafale, which could equally be a prototype for a European programme.

In space research, the biggest individual new development is the projected U.S. Manned Space Station, in which Europe may participate, for the 1990s, but there are various independent European programmes, including the progressive improvement of the Ariane satellite launching vehiclo and the Spacelab manned orbiting laboratory which, together with growing demand for satellites of all kinds, are serving to keep the space sectors of the aerospace industries busy.

Similarly, demand for guided

CONTINUED ON PAGE 16

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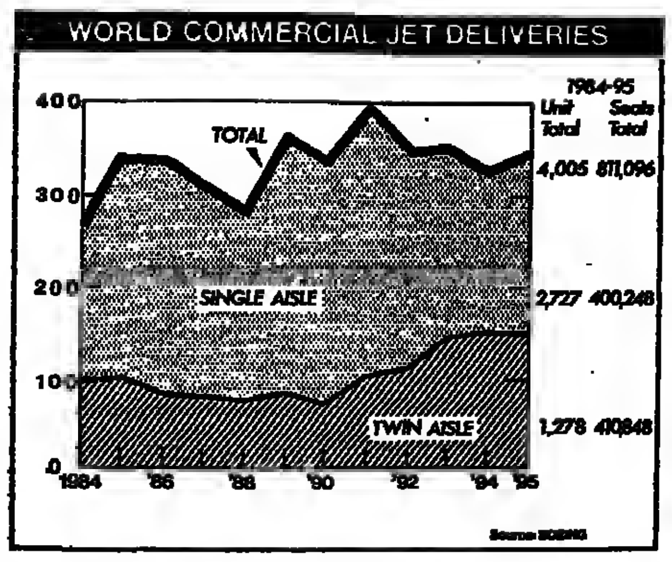
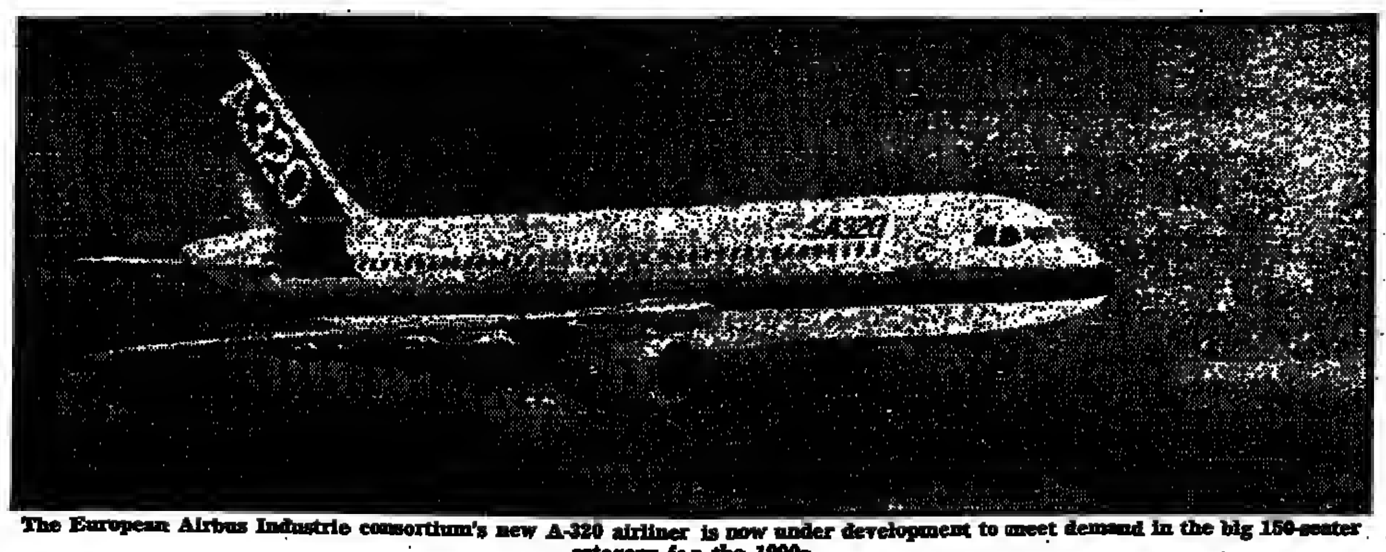
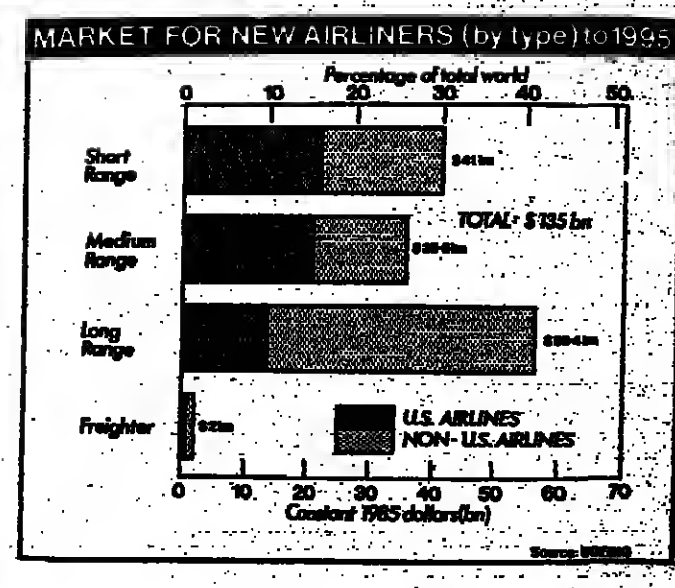




The European Airbus Industrie consortium's new A-320 airliner is now under development to meet demand in the big 150-seater category for the 1990s



Expanding market stimulates new technology ventures

Airliners

MICHAEL DONNE

WITH SALES worldwide of new airliners slowly recovering as the airlines climb out of the recession, the major manufacturers are busy preparing several new advanced technology ventures, designed to capture the expanding markets foreseen through the remaining years of this century.

This trend is especially so in the short-to-medium range field, where demand for new generations of airliners in the 100-130 seater and 150-160 seater categories is already emerging. It applies also in the long-haul market, however, where although the dominance of the Boeing 747 Jumbo jet at over 400 seats remains unchallenged, there is growing interest in a new, smaller-capacity 250-350 seater replacement for the McDonnell Douglas DC-10 and Lockheed TriStar.

Demand is also emerging for e smaller long-range aircraft for the so-called "long, thin" routes — those where long-distance performance is required but where traffic densities do not justify an aircraft seating more than about 250. This seems likely to be met either by e new version of the European Airbus (the four-engined TA-11), or by an extended-range derivative of the Boeing 767 twin-engined airliner, which is already being used for long-range over-water operations on the North Atlantic, or by a new aircraft in the MD-11X series of tri-jets from McDonnell Douglas.

At the bottom end of the scale, demand for airliners of various sizes upwards from 20 to 70 seats remains exceptionally strong, especially in the smaller "commuter" and "regional" airliner field. Competition in this arena is the fiercest found anywhere in the entire range-payload spectrum, and seems likely to continue to be so, as new designs emerge.

So far as the overall world market is concerned, Boeing, the world's biggest jet airliner manufacturer, estimates that it will amount to about $135bn through to 1995, covering over 4,000 aircraft, of which about $57bn will be accounted for by U.S. airline purchases, and the remaining $78bn by airlines in the free world outside the U.S.

This demand will be generated both by traffic growth, accounting for some $85bn, and the remaining $50bn by the replacement of existing, ageing and fuel-inefficient and unacceptably noisy jets.

Replacement

Boeing's analysis shows that most of the orders currently being placed world-wide, but especially in the U.S., are for the replacement market—hundreds of ageing tri-jet Boeing 727s, for example, in U.S. airline fleets alone are now over 10 to 15 years old.

Once this replacement market is met, however, the longer-term outlook will be for the traffic growth to dictate an upsurge in new orders, probably later this decade. Boeing believes that as a result, more new airliners will be bought over the next 10 to 12 years than in the whole of the past 18 years, reflecting the overall growth of the world air transport system.

The world airliner market situation is thus currently dominated by a number of major competitions, covering various aspects of the range/payload spectrum.

The battle for the so-called "150-seater" is one of the most significant, because the total available market is so large, accounting for well over 1,000 aircraft between now and the end of the century.

This competition is between all three major manufacturers. McDonnell Douglas of the U.S. is offering its MD-89 of up to 172 seats, although it argues strongly that its MD-83, currently available with up to 155 seats, is the ideal 150-seater for the mid to late 1980s.

Boeing is just as convinced that its current 737-300 short-to-medium range airliner, with about 145 seats, also meets the airlines' immediate needs for a 150-seater. Airbus counters that it alone has the "true" advanced technology 150-seater with its A-320, now under construction for delivery in 1988-89.

Into this struggle, however, Boeing has thrown a new element—a plan for a new aircraft of the 150-seat size, for delivery in about 1992 but embodying so much advanced technology that it will overtake everything else in the market, including the A-320, and MD-89.

This new aircraft, not yet given a designation, may or may not be a prop-fan—an aircraft using the turbo-propeller concept in which the aircraft may be driven by a propeller shaped like a ship's screw and harnessed to a gas-turbine engine.

The concept of turbo-propeller aviation is not new, many current small airliners having turbo-propeller engines. What is new is the propeller design itself. The ship's screw concept, it is claimed, will yield lower noise and vibration and a huge saving in fuel consumption, anything up to 40 per cent below current jet engine consumption figures, while giving almost jet-like speeds.

Both Boeing and McDonnell Douglas are closely studying this this concept, but Airbus, having committed itself to e jet engine (either the V-2500 or CFM-56) for the A-320, is not involved in prop-fans, at least for the immediate future. Boeing has until 1988 (the date at which it must commit itself to its new airliner for 1992 delivery) to make up its mind on which power plant to use.

The flight-test programms to be conducted over the next two to three years by the major engine and airframe manufacturers on the prop-fan concept will prove its viability or otherwise, to enable such airframe builders as Boeing to decide which power-plant to use, in time to ensure deliveries by the early 1990s.

Those flight-test programmes, and the subsequent airliner design competitions they will generate, will probably dictate the course of much of the short-to-medium range airliner market through the 1990s and beyond.

In the long-range category, the dominance of the Boeing 747 Jumbo jet continues, with 645 ordered to date, of which over 600 have been delivered. New orders continue at a steady pace, maintaining a production rate of about 18 aircraft a year.

Boeing has plans for further improvements to the aircraft, in the Advanced 747-300, to improve range and payload performance. But plans discussed some time ago for possible eventual larger developments, eventually reaching up to 1,000-seater aircraft, have been quietly shelved for the foreseeable future.

Astronomical

There is no demand for such monsters among the world's airlines while the cost of their development and purchase could be astronomical, especially when a present-day Jumbo of the Series 300 type can already cost wellover $100m new.

Beneath the 747, there is emerging a need for a replacement of both the 350-seat McDonnell Douglas DC-10 and the Lockheed TriStar. While both those aircraft are likely to continue in service for a long time to come, they are "old technology" aircraft by comparison with the continually improving 747, and although the DC-10 continues in limited production alongside the military tanker-transport KC-10 line, production of the TriStar has already been halted.

But the airlines have made it clear that they would like to see some medium to long-range aircraft emerging with a capacity of 300-350 or so seats, not only to complement the 747 on routes where traffic densities do not justify 747-size loads, but also to ensure thaat Boeing does not always have things all its own way in the long-range large aircraft market.

McDonnell Douglas is accordingly now discussing with airlines plans for a series of tri-jet ariliners, under the designation MD-11X-MR, which would cover medium ranges (337 passengers), the M-11X-20 for long ranges (331 passengers) and the MD-11X-10 for extended (very long) ranges, with 277 passengers.

If airlines placed orders in 1985, McDonnell Douglas could have the MD-11X-10 flying in 1987, and both the MD-11X-20 and MR flying in 1988, with deliveries to airlines by 1988 and 1989 respectively. The aircraft would be substantially derived from the original DC-10, but would also incorporate substantial advanced technology in flight deck sytems and improved power-plants (such as the Pratt & Whitney 4000 series or the General Electric CF6-80C2).

At least one of these models, the MD-11X-10 for extended ranges, would provide substantial competition for the proposed European Airbus TA-11, the plan for a four-engined airliner for use on the "long, thin routes." Many airlines are showing interest in such a venture.

McDonnell Douglas says that its MD-11X-10 could carry as few as 244 passengers and still be highly profitable. The fact that it is offering competition in this field is a spur to Airbus to press ahead with its own plans for the TA-11.

Preliminary design work on the TA-11 has already begun, and Airbus says that if it were to be launched this year or next, it could be in service by 1991-92. The aim is to develop a 230-plus seater for use over routes of up to 6,500 nautical miles.

It would be substantially based on the existing A-300-600 long-range Airbus, but would have a longer fuselage. The TA-11 would use either the International Aero-Engines' V-2500 power-plant, or the Franco-U.S. (Snecma-General Electric) CFM-56-5, both of which are under development for the smaller 150-seater generation of twin-engined airliners.

Airbus Industrie's problem is that it must find the cash to develop such an aircraft. With the member-governments (UK, France, West Germany and Spain) already contributing substantial launch aid for the A-320 itself, and Airbus not yet a profitable organisation, it will have a tough task in convincing its shareholders that yet further investment is desirable, especially with the large sum involved—the TA-11 could not cost less than $1bn in development funds.

Big dilemma

But the Airbus problem with the TA-11 highlights the big dilemma confronting European civil aircraft manufacturing—the need to have e wider product base, covering several different types of aircraft, if Europe is to compete effectively with the U.S. giants. Governments will have to consider this situation carefully, and recognise that if they wish to have a major airliner building facility in Western Europe, it will require continued heavy investment for some considerable time to come.

At the lower ends of the scale, in the broad 100-seat category and in the areas of much smaller aircraft seating anything from 20 seats upwards to about 50 or 60, the competition is no less fierce.

The 100-seat market for short-range airliners is now becoming over-subscribed. The British Aerospace 146 four-engined regional airliner, originally designed for 90-109 seats, is now also being offered in a 125 to 130-seat category, in competition with the Fokker F-100, the McDonnell Douglas MD-87 and now also the proposed Boeing 737-100L (for "Lite").

Below this level, in the category for airliners seating anything upwards of 20 seats, the market is so wide and overcrowded that success or failure for any type is impossible to gauge. All that is clear is that the market is vast, for it covers much of the short-range "commuter," "regional" and "local service" sector of world civil aviation where most people currently fly and where much of the future growth to the end of the century will be concentrated.

For the longer-term future, British Aerospace, together with Rolls-Royce and propeller manufacturers, have established a joint research and study programme on a wide range of possible designs for a future Fuel Efficient Advanced Transport (Feat).

This venture not only covers derivatives of existing British Aerospace transport aircraft designs, but also wholly new concepts, including especially aircraft using the advanced prop-fan concept.

Complexities of competition and collaboration

Engines

MICHAEL DONNE

THE WORLD aero-engine scene is currently dominated by a complex pattern of apparently conflicting trends of competition on the one hand and international collaboration by the same companies on the other.

Rolls-Royce, for example, competes with the U.S. giants Pratt & Whitney and General Electric in the high-thrust end of the civil engine market, with the RB-211-524D4 series ranged against the Pratt & Whitney JT-9D and GE's CF6-50 and 80 series.

But at the same time, Rolls-Royce collaborates with GE on that company's very high-thrust CF6-80C2, of over 60,000 lbs thrust, thereby saving itself the expense of developing a competitive engine to both that and Pratt & Whitney's PW-4000 series, while GE in turn collaborates with Rolls-Royce in the latter's medium-to-high thrust RB-211-535E4 series.

Similarly, Rolls-Royce is collaborating with Pratt & Whitney (and West German, Italian and Japanese aero-engine companies) in the International Aero-Engines consortium developing the V-2500 engine of around 25,000 lbs thrust for use in the next generation of 150-seat airliners, ranged against the CFM International consortium, comprising GE and Snecma of France, which is developing the CFM-56 series of engines.

Soaring costs

The prime reason for the emergence of this complex situation is simply the soaring costs of aero-engine development. A few years ago, some of the major engine companies would have never believed that the current position would ever emerge—although Rolls-Royce has always had a history of international collaboration and licence agreements.

But today, when a new aero-engine of major size can cost upwards of £750m to develop, no single engine builder can find the resources to continue alone across the entire spectrum of engine demand.

While all the major manufacturers do have either sole, or majority controlled, engine ventures — Rolls-Royce, for example, is developing the new Tay engine as a private venture for such airliners as the Fokker F-100 — the heavy costs of launching into new markets with new developments, incorporating the expensive advanced technology that all airlines are demanding, tend to dictate collaborative ventures.

Since the traditional pattern of competition between Pratt & Whitney and GE (and the U.S. anti-trust laws) prevent those two companies from working closely together, they turn to overseas engine companies in the UK, France, West Germany, Italy, and Japan for their prospective partners.

Just how far this collaborative pattern will be perpetuated in any major new aero-engine ventures that emerge between now and the end of the century remains to be seen.

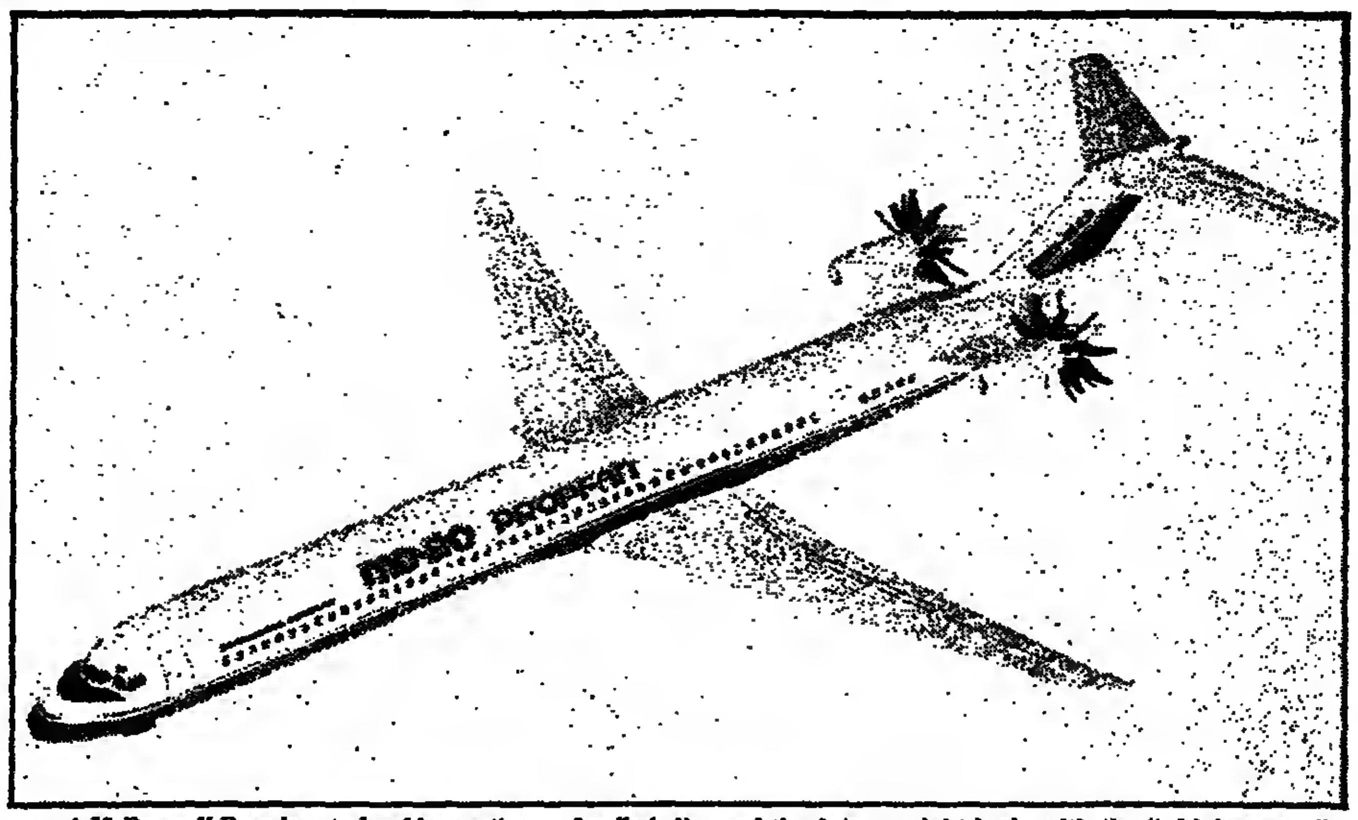
The most significant new development now taking shape is the emergence of the prop-fan — a revolutionary exploitation of the turbo-propeller concept that may yet radically change the face of world civil air transport, and which may well become a candidate for international collaborative action before the end of this decade.

The concept of turbo-propeller engines — the harnessing of a gas-turbine engine to drive a propeller for aircraft propulsion — is well understood, and widely used.

The first successful turbo-prop airliner was the British Viscount, followed by the Britannia and the Vanguard but many other civil and military aircraft use turbo-prop propulsion, including most of today's generation of small regional airliners, such as the Shorts 330 and 360, Brazilian Embraer Bandeirante, and the more recently developed Saab-Fairchild 340 and Franco-Italian ATR-42.

The difference between conventional turbo-prop and the new prop-fan aviation, however, lies in the revolutionary design of the propeller itself. This, in prop-fan engines, is shaped rather like a ship's screw, and is claimed to be able to produce substantial performance improvements, including major reductions in noise, vibration and fuel consumption (up to 40 per cent improvements, according to some calculations) although all of those claims have yet to be proved in sustained flight trials.

It is claimed that these prop-fans, with up to 12 blades instead of the three, four or even six-bladed conventional propellers of today's turbo-prop engines, will be capable of driving much bigger airliners, of the 150-seater category or even larger, at the same speeds as jet-powered aircraft.



A McDonnell Douglas study of how a "prop-fan" air liner of the future might look, with the "ship's screw" type propellers mounted on engines at the rear of the aircraft

The problems, and the controversy, over the use of prop-fans arises for two main reasons.

One is that much more research is needed before the claims can be substantiated, with many technical difficulties still to be overcome—such as designing appropriate gear-boxes, and revising wing and airframe concepts, and deciding whether prop-fan engines should be "tractors" that is mounted on the wings to effectively pull the aircraft along), or "pushers" (mounted at the rear of the aircraft, with the prop-fans behind the engines), to force the entire aircraft through the sky.

The second problem is that all the major aero-engine manufacturers have already committed large sums of scarce development cash to conventional turbo-fan (jet) engines. They do not necessarily want that investment eroded or even challenged unless the new type of power-plant can either offer sufficiently substantial improvements to justify its development or can attract one or more air-frame manufacturers sufficiently interested to stake their own money on an aircraft development built round the prop-fan.

By early spring this year, it seemed that this situation might be emerging. All the three major aero-engine builders—Rolls-Royce, Pratt and Whitney and General Electric—have been studying the prop-fan concept with varying degrees of enthusiasm.

In the UK, Rolls-Royce is cautious. While recognising the technical possibilities, it feels that the savings in terms of fuel consumption and other direct operating costs do not yet justify the substantial investment in prop-fans that would be required.

Rolls-Royce is nevertheless undertaking a two to three-year research programme to determine answers to basic questions about prop-fans—noise levels, airworthiness requirements, and configurations aboard aircraft—using a geared system with contra-rotating propellers.

The company feels that even if such a programme does result in all the answers it needs, it would still be difficult, if not impossible, to produce a commercially marketable prop-fan by the early 1990s, as some U.S. airframe and enginemakers believe, and that the mid-to-late 1990s is more likely.

Military

Nevertheless, it hopes that, by 1987, the technical data from its research programme should be sufficient to enable it to determine whether a more significant development programme could and should be undertaken. Even so, Rolls-Royce believes that the most likely starting aircraft for a prop-fan would be a military, rather than a civil, transport.

Much of the pace of the Rolls-Royce programme, however, could be dictated by events in the U.S., where interest in prop-fans is much greater than in the UK, and where the research programme is considerably further advanced.

The U.S. Government-funded National Aeronautics and Space Administration, for example, has been conducting much work into prop-fan technology since 1975, supported by the major airframe and engine companies, and such other companies as Hamilton Standard (part of United Technologies group), which has devised the prop-fan "ship's screw" concept which is regarded as the most up-to-date prop-fan in existence today.

Both Pratt & Whitney and General Electric are engaged in substantial ventures to determine the longer-term economic and technical viability of the concept, although each has chosen a different path.

Pratt & Whitney believes the "gear prop-fan" is the best route to follow, arguing that a geared prop-fan is more easily adaptable to different engine-airframe, tractor or pusher installations. By contrast, a gearless prop-fan, it is argued, is at its best only in a rear-fuselage mounted installation of the "pusher" type, using counter-rotating blades. General Electric has chosen to follow the "gearless" path with what it calls its "Unducted Fan" engine.

Boeing has already shown considerable interest in the overall prop-fan concept, as a possible power-plant for any future 150-seater airliner it may build for the early 1990s. Boeing has already conducted wind-tunnel tests on the GE counter-rotating Unducted Fan concept, and GE is to start full-scale ground tests later this year.

A joint Boeing/GE flight test programme, calling for the installation of a prototype engine in the right-hand pod of a rear-mounted engine in a 727 airliner, will begin in mid-1986.

Simultaneously, McDonnell Douglas is closely studying prop-fan technology, and will also undertake flight trials in 1986, using either GE or Pratt & Whitney prop-fans, or both, to determine the validity of the concept overall and the relative merits of "pusher" versus "tractor" installations.

Lockheed is also strongly interested in prop-fan technology, and is conducting research for NASA on an advanced technology propeller that could yield a 20 per cent fuel saving over conventional turbo-fan powered aircraft and yet be competitive in speed with today's jet airliners.

Lockheed estimates that by the year 2000, the market for such a system could approach 5,000 aircraft of all kinds. Mr William Arndt, programme manager for prop-fans at Lockheed, says: "Propellers may be about to make a big comeback. By the mid-1990s, the airlines may be routinely flying passengers in this new type of propeller-driven aircraft."

All the manufacturers hope that these trials will either verify the key technologies required in prop-fan development, or show up areas where further research is required, whether in aerodynamics—the most suitable mounting of prop-fan engines on the airframes and any changes in fuselage and wing designs that might be required—or in such areas as noise, vibration and fuel consumption.

It is hoped that the flight trials will illustrate clearly the relative merits of wing-mounted "tractor" or rear-fuselage-mounted "pusher" type engines, with or without contra-rotating fans, and with or without gears.

It has been claimed that if such programmes can demonstrate the validity of the overall concept by 1987, the aero-engine industry itself in the U.S. could initiate final design and certification programmes of prop-fans by 1987. This would enable airframe manufacturers such as Boeing and McDonnell Douglas to consider such power-plants serious for new generations of jet airliners for the early to mid-1990s—such as a Boeing 150-seater to rival the European Airbus A-320.

In this situation, much will depend upon what decisions major U.S. airlines such as Delta and United will take on new equipment. Each is planning to replace existing ageing fleets of Boeing 727 and other aircraft, and wants a new, fuel-efficient aircraft from the late 1980s.

Derivative

They may decide upon an existing type of jet airliner on offer—the Airbus A-320, the McDonnell Douglas MD-89 (for up to 170 passengers), or even a Boeing 737-300 or another derivative of that venture. If an airline of such a size as Delta or United wants a particular type of aircraft, the manufacturers will almost inevitably produce it, for such an order could not be turned away.

In the meantime, many of the major engine development programmes continue to go well. The IAE V-2500 itself is on schedule, with firm for 62 engines so far and another 92 on option from three airlines, worth in all $600m.

IAE has already identified about 30 airlines world-wide as potential customers for the V-2500 over the next three years. Altogether, those airlines would need some 860 engines in the 25,000 lbs thrust range, worth $3.5bn at current prices, excluding spare parts.

Rolls-Royce is also well ahead with development of its new Tay civil engine for such aircraft as the Fokker F-100 and other potential 100-seaters, such as the Boeing 737 "Lite," while the engine is also on order for the smaller Gulfstream IV aircraft.

Work has begun on a higher-thrust version of the Tay to exploit an expected market for higher all-up weight designs of the Fokker F-100 in the years ahead. This derivative of the Tay could be available from late 1988.

High level of demand continues

Military aircraft

MICHAEL DONNE

DEMAND FOR military aircraft of all kinds, but especially of light, low-cost tactical combat types, remains at a high level, and is estimated to be running in the Western world at about $30bn a year.

This includes spending by the U.S. and other Nato nations, with their combined outlays on military aircraft currently running at about two-thirds of the annual total, rather less than the three - quarters level of some years ago, when Nato re-equipment was in full spate.

Today, an increasing proportion of the total is being taken by the spending in developing countries, where demand especially for low-cost but highly efficient tactical combat aircraft remains strong.

Among countries outside Europe, spending on combat aircraft in tha Middle East remains high, estimated to amount to about 10 per cent of the non-Communist world total. Although this is rather less than it was a few years ago, it is still high compared with the U.S. and other non-European countries.

The biggest share of the market is accounted for by tactical aircraft of comparatively low unit cost, which can be most easily procured and assimilated by countries with small defence budgets. But substantial sales of more expensive and sophisticated types to some air forces are still achieved, and competition among the major military aircraft producing countries — the U.S., the UK and France — remains fierce, especially between the Tornado, the U.S. F-15 and F-16 and the French Mirage 2000.

In the UK, West Germany and Italy, the major programme continues to be the Tornado multi-role combat aircraft being built by the tripartita Panavia consortium, with close to 450 aircraft out of tha 809 ordered now delivered.

Production of Tornado is now at its peak, and through the remaining years of this decada it will be slowly running down. Although there are other major military programmes still in progress in the UK—production of Hawk trainers and light combat aircraft, Jaguar jet strike-trainer aircraft for overseas countries, and Advanced Harriers for the RAF and the U.S. Marine Corps (in conjunction with McDonnell Douglas of the U.S.), the UK aerospace industry as a whole is now looking towards major new military programmes for the rest of this century.

The most significant of these is the plan for a new European Fighter Aircraft (EFA), that will be required in the early to mid-1990s to replace existing ageing Jaguars, Phantoms and Lockheed F-104s in tha air forces of such countries as the UK, France, West Germany and Italy, but with many other air forces both within Europe and elsewhere also likely to be interested.

Progress in getting such a venture started, however, has been much slower than many had originally anticipated.

Discussions between the five nations involved—UK, France, West Germany, Italy and Spain—on the feasibility of such a venture have been delayed by difficulties in settling work-sharing and design leadership issues, with the French persistent in pursuing the latter and seeking a higher work-share.

The UK industry, headed by British Aerospace, has been pressing for a more equitable distribution of the work—25 per cent each to the UK, West Germany, and France, with Italy taking 15 per cent and Spain 10 per cent.

A meeting of Defence Ministers in late May made some progress towards a compromise solution, but a further Minister's meeting in London in mid-June must he held before any final go-ahead can be given.

The EFA plan envisages eventually upwards of 800 aircraft for the five air forces primarily involved, but with sales to other European air forces and those further afield, total production could rise to well over 1,000 aircraft.

The five nations want to see a twin-engined tactical combat aircraft, but there have been marked differences of view as to its precise role and operational capability, with France seeking primarily a ground-attack fighter of about 9.5 tonnes and the remainder seeking a bigger, heavier multi-mission capability for both ground-attack and air superiority over the battlefield.

In the meantime, British Aerospace, in conjunction with Rolls-Royce and the major equipment manufacturers, and with some assistance from the Italian aerospace industry, is developing the Experimental Aircraft Programme (EAP), a single "technology demonstrator" that is designed to bring together a wide range of advanced military aircraft technologies—advanced flying controls (fly-by-wire), advanced avionics in the pilot's cockpit, the extensive use of advanced materials such as carbon fibre, as well as new manufacturing techniques.

The EAP, funded 50-50 by the Government and the aerospace industry, could be the forerunner of the European Fighter Aircraft if necessary, or in effect the prototype of a solely British national solution to future fighter development if the EFA fails to materialise.

The French aerospace industry, however, is not being left far behind, with Dassault-Breguet developing its own comparable aircraft to the EAP, called the ACX (Avion de Combat Experimental), now called the Rafale, which would also make a contribution to any future European Fighter Aircraft venture.

Both the EAP and ACX are broadly comparable in size, and although little has been published about the latter, it is believed to include equally considerable advances in technilogy to the EAP, and would give the French industry an opportunity either to go ahead alone on a future fighter, or to lead a smaller multi-nation collaborative venture, if a programme including the UK failed to emerge.

Other major military aircraft activities now being pursued by British Aerospace include preliminary development of designs for an eventual supersonic vertical and short take-off and landing fighter (V/Stol) that could replace the existing Harrier in both the RAF and U.S. Marine Corps and Navy fleets.

BAe has been working with McDonnell Douglas (its partner in the Advanced Harrier programme), and work has reached a stage where both manufacturers are confident that such a fighter is practicable, although no governmental requirement for it has yet been stated, and no funding granted.

Nevertheless, this project remains one of the most important for the later 1990s and beyond, and could assume as great a significance as the European Fighter Aircraft programme itself.

For smaller, light tactical combat aircraft of the future, Brtish Aerospace also has a plan for a Light Combat Aircraft (LCA), powered by a single Rolls - Royce / Turbo-Union RB-199 engine, and it believes that such a venture could be developed on an international basis with a partner country, especially in the Developing World.

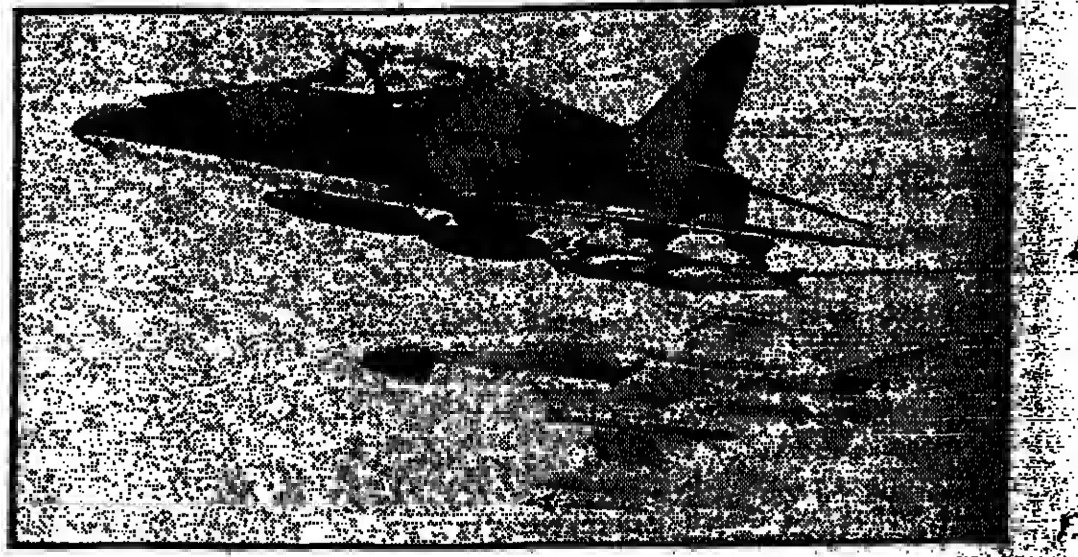
India is one of the countries with whom BAe has discussed the venture, but so far no firm programme has emerged.

In the interim, BAe is pushing ahead with the private venture development of a tactical combat version of tha Hawk trainer, the Hawk Series 200, as a small, single-seat fighter-bomber capable of day and night operations in all weather, and of low initial cost, again with Developing Countries' air forces especially in mind.

Competiton for light tactical combat aircraft worldwide is fierce, however, with countries such as Italy and Brazil combining to build the AMX fighter, and even Israel developing its own combat aircraft, the Lavi, intended to be a "home-grown" answer to the combat needs of the Israeli Air Force.

The U.S. Air Force is also continuing its own studies into a new Advanced Tactical Fighter for the mid to late 1990s, and nearly $243m for research and development on that venture has been allocated in the 1985-86 Defense Budget. A request for proposals for such a venture is now being drawn up for issue to manufacturers this summer.

The transport side of military aircraft development is not being ignored. British Aerospace, together with Aerospatiale of France, Messerschmitt-Bolkow-Blohm of West Germany and Lockheed of the U.S., are studying the potential market for a large military transport aircraft, that could also have civil applications, for the 1990s, known as FIMA (Future International Military Airlifter).



The British Aerospace Hawk 200 single-seat light fighter is now under development for a wide range of tactical combat roles, including air-to-air and anti-shipping roles, as well as ground-attack. The aircraft is derived from the highly-successful Hawk jet trainer

Challenging programmes in Europe and U.S.

Helicopters

MICHAEL DONNE

HELICOPTER technology worldwide is undergoing a radical advance as a result of several challenging new programmes in Western Europe and the U.S.

In Western Europe, these include the Anglo-Italian (Westland-Agusta) EH-101 programme, one of the largest European helicopter programmes, to develop a new anti-submarine warfare helicopter to replace ageing Sea Kings, with a civil transport variant also envisaged.

At the same time, Eurocopter, a Franco-German (Aerospatiale and Messerschmitt-Bolkow-Blohm) group, is working on a new anti-tank and battlefield support helicopter, the HAP/PAH-2/HAC-3G.

Looking further ahead, a new European multi-national study into a possible tactical troop transport helicopter for the 1990s, currently designated NH-90, has been initiated, but although an eventual run of some 700 aircraft is envisaged, this is still in its earliest stages and is not yet a formal development programme.

The £400m Anglo-Italian (Westland-Agusta) EH-101 helicopter programme has been designed primarily to meet and beat the threat from increasingly sophisticated submarines and their weapons in the 1990s. As submarines become more efficient—quieter, and equipped with anti-ship missiles and long-range homing torpedoes—they become more difficult to detect, and can be up to 100 miles from their targets.

This in turn means that a new-generation anti-submarine warfare helicopter needs high endurance, long-range, and a built-in search and strike capability. The EH-101 will thus include all-weather operation by day and night from small ships; effective long-range active and passive sonar and processing equipment; good navigation and communications systems, and a crew workload reduced as much as possible.

The EH-101 is due to fly in December, 1986, and commercial civil and utility variants are being developed alongside the maritime military version. There will be two production lines, one in the UK and another in Italy. Total sales into the next century are expected to exceed £10bn.

A recent major European development has been the outline co-operation agreement between Westland and Agusta of Italy to study, among other projects, a possibla version of tha Agusta A-129 Mongoose helicopter for anti-tank duties in the 1990s. Including the EH-101, this could he the precursor of a major Anglo-Italian axis on European helicopter development, matching and competing with the Franco-West German axis already developed by Aerospatiale and Messerschmitt-Bolkow-Blohm.

In the UK, the AST-404 programme to find a replacement for the ageing RAF and Army Wessex and Puma transport helicopters could offer additional opportunities to advance helicopter technology.

One submission is the existing Sikorsky Black Hawk, widely used by the U.S. armed forces, in conjunction with Short Brothers of Belfast. If selected, this aircraft would be powered by the new Rolls-Royce RTM-322 engine, which would not only improve the Black Hawk's performance but also encourage the U.S. Army, a big user of Black Hawks, to adopt the engine also.

This would generate a massive market for the RTM-322 which the UK can hardly afford to ignore.

These actual and potential programmes are substantial in budgetary terms, and seem likely to provide considerable employment for the helicopter industries of Western Europe.

What remains to be seen is whether the advances in helicopter technology they will provide will be sufficient to keep the West European manufacturers abreast of their U.S. counterparts, who are already getting the early benefits of several multi-billion dollar programmes that will eventually produce many thousands of aircraft up to the end of the century.

One of these major U.S. programmes is the LHX (Light Helicopter Experimental), a plan by the U.S. Army eventually to acquire 7,000 helicopters, costing over $35bn, to replace a wide range of existing ageing light helicopters for a variety of battlefield and other roles.

The competition has already drawn in all the four major U.S. manufacturers—Sikorsky, Hughes, Boeing-Vertol and Bell.

The aircraft required will be an intermediate weight aircraft, of around 8,000 lbs. It will carry helicopter design a major step forward, requiring the use of composite materials in the entire structure, new powerplants and advanced avionics (including automatic computer-controlled flying leaving the single pilot much more free to fight).

The technology driving the LHX programme is already being felt. Sikorsky, for example, has built the Advanced Composite Aircraft Programme helicopter (ACAP) for the Army, generating new knowledge of composite structures; while the Advanced Rotocraft Technology Integration (ARTI) programme is also generating new knowledge in helicopter controls and avionics systems.

The U.S. manufacturers believe that the UK's AST-404 may generate some new knowledge, provided it is built round the Rolls-Royce RTM-322 engine, but otherwise it is regarded merely as a replacement programme, providing employment but not generating any major new technology. The U.S. industry also believes that the Franco-German PAH-2 programme parallels the U.S. Army's LHX programme in its objectives, but is not likely to generate anything like the same technological advances as the LHX.

Nor is there much U.S. enthusiasm for European multi-national studies into the future NH-90 venture, which is regarded as an attempt to re-invent a tactical troop transport helicopter of the existing Black Hawk type. By the time NH-90 comes to fruition, it is claimed, Black Hawk (and other helicopter) technology will have moved a long way ahead and Europe will have to work hard on NH-90 to catch up.

Another major U.S. helicopter programme now under way is the $1.5bn joint Bell-Boeing Vertol JVX "tilt rotor" aircraft, now redesignated the V-22 programme. This is a multi-mission aircraft.

An eventual total of close to 1,000 aircraft is envisaged, amounting to more than $15bn. First flight of the aircraft is set for 1988, with deliveries to the U.S. Marine Corps in early 1991.

The unique feature of the V-22 will be the "tilt-rotor" concept, with the rotors mounted on swivelling engines that can lift the aircraft near-vertically like a helicopter, but swivel in flight to provide conventional forward propulsion. In this programme, as in the LHX, the technology "drivers" again will be in blade airfoil design, aerodynamics, composite materials, avionics and other systems, such as hydraulics.

An eventual 44-passenger commercial version of the V-22 is envisaged, although this may be some way off, into the mid to late 1990s.

In the meantime, Boeing-Vertol itself is working on the private venture Advanced Technology Helicopter (ATH) programme to provide an advanced derivative of the twin-rotor Model 234 transport aircraft (already in service) called the Model 360.

Boeing is also now resuscitating the world's biggest load-carrying helicopter, the original XCH-62 of the early 1970s, under a new joint Army/NASA/Defence Advanced Research Projects Agency vehicle.

World helicopter market outlook 1985-99

(Units and values $bn)

Market sector	Weight class: Light 0-7,000 lb gross weight	Intermediate 7-14,000 lb gross weight	Medium 14-30,000 lb gross weight	Heavy 30,000 lb and over gross weight	Total
U.S. Government	—	3,637 $5.5bn	2,969 $12.1bn	661 $5bn	7,267 $22.6bn
Foreign military	3,970 $3.1bn	4,128 $11.7bn	2,444 $12.6bn	266 $2.6bn	10,808 $30bn
Worldwide civil	13,377 $9bn	3,390 $7.2bn	585 $2.6bn	2 —	17,354 $18.8bn
Total	17,347 $12.1bn	11,155 $24.4bn	5,998 $27.3bn	929 $7.6bn	35,429 $71.4bn

Source: Sikorsky Aircraft (U.S.).

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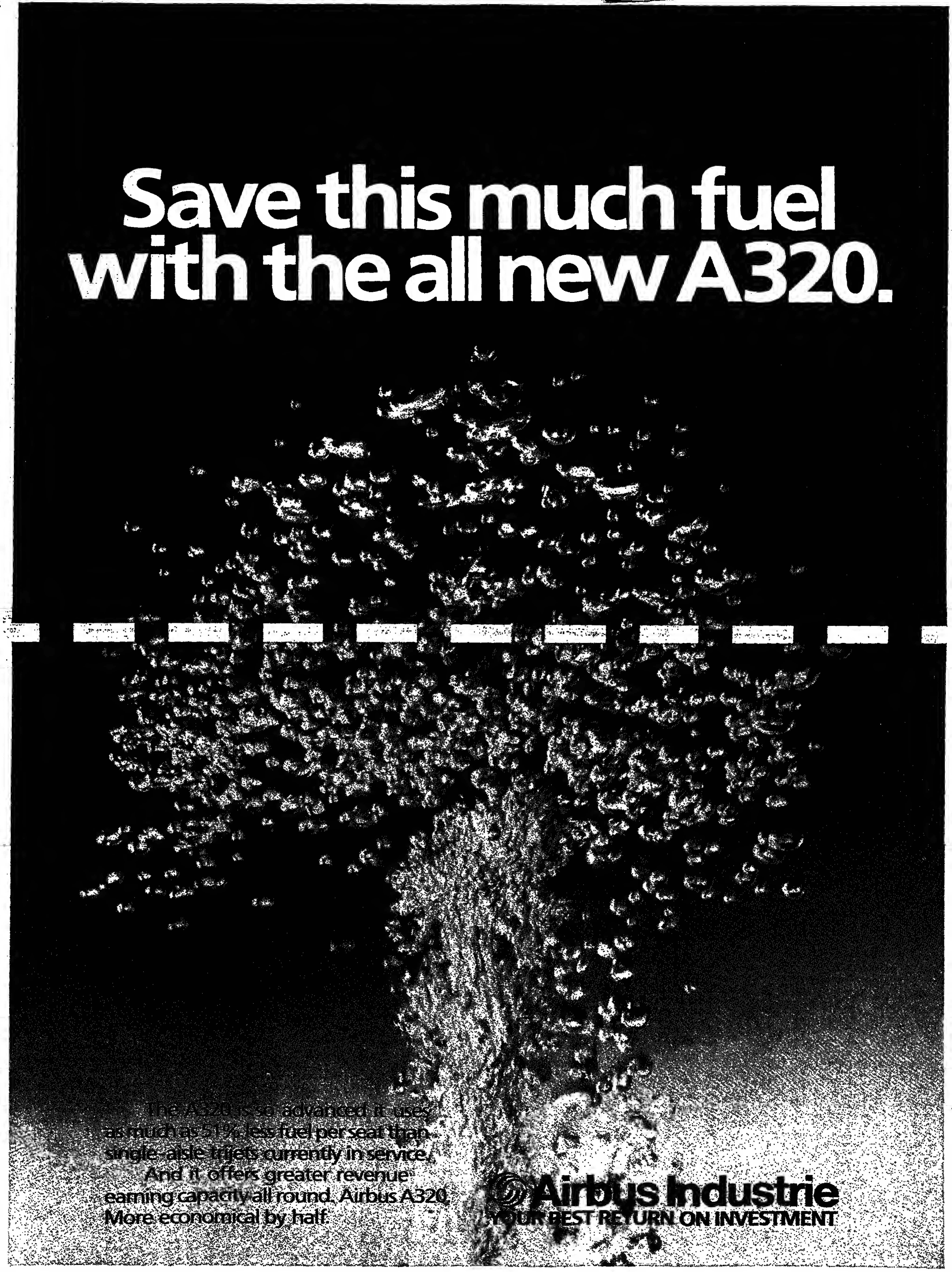


Strong return from recession

Airlines

MICHAEL DONNE

IT IS NOW clear that air travel worldwide is recovering strongly from the depths of the recession, and that as a result there is now a note of greater optimism among the world's airlines, albeit still tinged with some caution.

Statistics prepared by the British Airports Authority show that in the early months of this year, passenger traffic handled at the seven UK airports it owns (including Heathrow and Gatwick) rose by some 8 per cent over the early months of last year, while for the year to end-February the growth amounted to more than 10 per cent.

In the U.S. traffic growth also amounted to between 9 and 11 per cent in the early months of the year, indicating that the recovery begun there last year continued in full spate.

Growth rates in South East Asia, the Far East and across the Pacific and transatlantic also remain high.

The evidence, therefore, is that so far as last year and the early months of this year are concerned, world air passenger traffic growth has been recovering sharply from the depths of the recession.

The ultimate effect of this growth on airline revenues and profits is difficult to gauge, although it does seem that for 1985, better financial results are in prospect.

The International Air Transport Association, which represents about 135 of the world's major airlines, estimates that, for 1984, its members achieved profits after interest of about $750m, rather lower than the $1.2bn originally forecast last autumn.

The IATA remains optimistic that for 1985 the situation financially will result in profits after interest of $500m so far as international scheduled services are concerned.

Nevertheless, the IATA warns that the financial outlook for the world airline industry remains "finely balanced," especially where scheduled international services are concerned.

"The planned profit margins are wafer thin," it says, "and extremely sensitive to even slight changes in traffic capacity, yield or unit cost trends. A small adverse movement in any of these parameters could quickly turn the industry back into deficit."

The IATA is even uncertain about the strength of the current economic improvement, fearing that there could be a possible downturn in the economic cycle, with traffic growth slowing by late 1985.

This could mean that only a slight increase in available capacity could reduce profitability for 1985. With the supply of seats out-stripping demand, the yield would probably weaken further. "If it deteriorated by only one percentage point, this could cut profits by a further $400m."

What the IATA is saying is that the world airline industry cannot yet really believe that it is out of danger and into a period of sustained profitability.

There has still, it says, to be constant attention to keeping costs under control, with the need for still tough slimming down measures that many airlines have hardly begun to undertake. And there can be no reversion to pre-recession management methods. Capacity controls need to be rigidly enforced; labour forces kept down to realistic levels and fleet equipment kept under tight control.

The airline industry also does not necessarily share the manufacturers' beliefs that there will be substantial re-equipment through the coming decade, although it recognises the factors that influence the manufacturers' thinking.

Boeing, the world's biggest jet airliner manufacturer, is forecasting that up to 1995 the total world market for new airliners will amount to about $135bn (in constant 1985 dollars). Of this about $85bn will be accounted for by growth, and the remaining $50bn by replacements of existing ageing fleets of jet airliners.

Boeing suggests that this market will amount to just over 4,000 airliners, of which about 2,725 will be "narrow-bodied" or "single-aisle" airliners, with the rest, about 1,280 aircraft, being larger twin-aisle aircraft.

It further analyses the market by areas of potential demand, and suggests that the U.S. share will fall a little, from today's 44.4 per cent to about 42.8 per cent, with the European share also declining a little, but the developing world's total rising, especially in Latin America and the Far East.

This is explained by the rapid growth of air transport in those areas, compared with the rest of the world.

Boeing also suggests, in its forward market analysis, that by far the biggest element of the $135bn will be invested by airlines in the long-range aircraft market, some 40-plus per cent of the total, or about $56.4bn, with about $35.6bn being invested in medium-range airliners and about $41bn invested in short-range airliners.

Most of the long-range market will come from the airlines of the developing world, anxious to increase their air transport links with the rest of the globe, involving substantial long-distance flying. About a quarter of all the potential investment in long-range airliners will come from the developing world, whereas for the short-range and medium-range equipment, around a half will be in the developing world among non-U.S. airlines and the other half in the U.S. arena.

Such estimates, in IATA's view, may be fine for the manufacturers, but from the airlines' viewpoint they should be regarded with some caution.

As IATA explained in its last annual report in October, only by showing an adequate and sustained level of operating profitability—and thereby acceptable levels of cash generation—would the industry be able to raise and service the loans and new equity—close to $150bn—that new equipment procurement will require.

A study by the IATA Financial Committee, while recognising the overall volume of re-equipment facing the airline industry, suggests that pre-tax the industry would need to earn an average operating profit, before interest, of at least 7.5 per cent to be able to meet the normal criteria of lenders and investors.

"Allowing for tax, this requirement rises to 10.5 per cent. Past performance varies widely between airlines, but the overall average industry level of profitability has fallen far short of this for many years."

Pointing out that the staff and other cost reduction measures carried out by major airlines over recent years, together with the recent recovery in traffic, have improved the overall financial situation of the airline industry, the IATA says that there is still much more to be done in this direction.

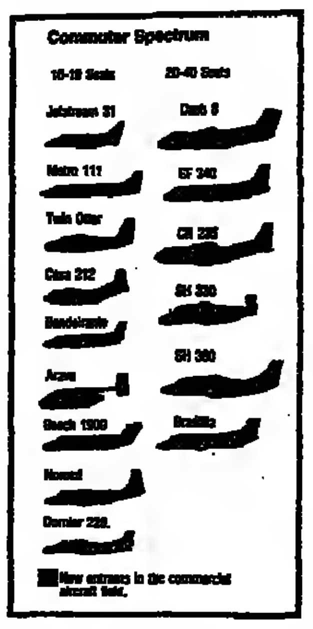
"While some individual carriers may be able to achieve and maintain the levels of profitability suggested, the likelihood of the industry as a whole being able to do so seems remote."

To keep pace with the growth of world air travel is just as much a problem on the ground, for the airlines and airport authorities, as it is for the airliner manufacturers. Some terminals, and even some airports, appear to be bursting at the seams already as a result of the renewed upsurge in air travel of the past year or two.

It has been estimated that in the 15 years between now and the end of this century—an investment of about $80bn will be required to provide the new and improved, ground facilities that the inexorable growth of world air travel will require.

For a variety of reasons, especially environmental and financial ones, the likelihood of major new airport runways being built in highly-developed countries, and especially on new "greenfield" sites close to major centres of population, seems remote.

New airport programmes, or improvements to existing ones, already under way or planned, acount for well over $23bn of the $80bn expenditure foreseen, and of that total close to $16bn is already being spent on airports in the developing world, that is, outside Western Europe or North America.



Collaboration essential on complex projects

Guided weapons

LYNTON McLAIN

THE SCALE and complexity of guided weapons programmes is such in the mid-1980s that international collaboration on new projects is almost mandatory as missile development and procurement costs spiral upwards.

Guided weapon programmes have been increasing in scale and complexity since the late 1970s in parallel with unprecedented technical advances.

These advances have offered new opportunities for military strategists to reassess battlefield tactics in the air, at sea and on the ground. There is no military scenario that has not witnessed the impact of guided weapon technology.

Guided weapons are now standard equipment for the armed forces of the Western world. They require missiles in large numbers, for air-to-air combat, for anti-tank, anti-ship, anti-aircraft roles and for defence and attack.

The reassessment of tactics has been possible through advances in micro-electronic circuit design and in computer power and miniaturisation which have led to the prospect of "intelligent" missiles that are self-contained and can operate as "fire-and-forget" weapons.

A recent example is the decision by the U.S., UK, France and West Germany to go ahead with the development of a "terminally guided warhead" for the multiple launch rocket system, the MLRS TGW programme.

This programme is likely to run into possible billions of dollars if a decision is taken in the late 1980s to put the system into production for the armies of the participating countries. Thousands of these salvo-launched rockets are likely to be required.

The MLRS I system made by LTV Aerospace division of the U.S. is already in production for the U.S. Army. This first generation system uses unguided ballistic rockets fired in rapid succession over a battlefield. Each rocket releases grenades to disrupt infantry and tank formations.

Stand off

The UK, Italy, France and West Germany are all considering buying this system, which may be built in Europe under licence.

The Mark III version, the MLRS TGW, is the most advanced so far, with an unspecified number of "intelligent" terminally guided munitions that head for individual tank targets once released by the multiple launch rockets over the battlefield. Each munition will be able to seek out a separate target and destroy it.

Other advances have led to production of the first aircraft-launched anti-satellite missile by tha U.S.

The U.S. Air Force tested the miniature homing vehicle payload on its 17 ft long anti-satellite missile for the first time last November, launched from an F-15 fighter aircraft. The weapon is designed to be operational in the late 1980s.

Developments in the UK include consideration by the Royal Navy of fitting a British Aerospace Dynamics Sea Wolf anti-missile missila to each of the Royal Navy's three Invincible class anti-submarine cruisers.

The vessels already carry BAe's Sea Dart ship-to-air missiles and are also to be fited with the General Dynamics Phalanx close-in weapons system. The Sea Wolf would compliment the role of tha Phalanx against sea-skimming missiles.

BAe Dynamics is developing and producing the vertical launch Sea Wolf missile system under a £130m contract from the Ministry of Defence.

BAe Dynamics is converting a 12,000 tonne ocean-going barge into a self-contained platform for trials of the vertical-launch Sea Wolf. Tha vertical-launch Sea Wolf missile is designed to have the ability to attack targets approaching from any point around the launch vessel.

The missiles will be launched vertically from deck-mounted tubes and then home in to the target on the appropriate heading.

The Dynamics group has also been awarded a £34m fixed-price British Army contract to develop a day and night optical tracking capability for the BAe Tracked Rapier surface-to-air missile system. The new capability is known as TOTE, for tracker, optical, thermally enhanced.

The TOTE system will be retrofitted to existing Tracked Rapier systems and will allow entirely passive operation with the Rapier system's surveillance radar switched-off.

In France, Aerospatiale, the French state-owned aerospace manufacturer, has developed a new version of its Exocet guided missile. The SM 39 is a submarine-launched version of the missile that destroyed HMS Sheffield in the Falklands conflict. The SM39 is to be used on French attack submarines and as a self-defence weapon on France's nuclear ballistic missile submarines.

Matra, the French missile manufacturer, may be awarded a full-scale development contract this year for its "missile d'interception et de combat aerial," the MICA short and medium-range air-to-air missile. The MICA missile would be a successor to the Matra Magic short-range missile and the Matra Super 530 longer-range missile.

British Aerospace has won a contract from the Ministry of Defence for project definition studies for a ground-to-air missile to travel at four times the speed of sound, or about 3,000 miles per hour. The £3m contract will cover work for one year. Full development would take a further four years.

The missile could replace the Blowpipe and Javeline missiles in service with the British Army.

Tha British Aeropsace Alarm, the air-launched anti-radar missile, has been flown, inert, for the first time on the Panavia Tornado combat aircraft. The Tornado from BAe's military aircraft establishment at Warton, Lancashire, flew with its maximum complement of nine Alarm missiles.

The radar seeker head of the missile has already been tested in the air and other main components of the missile are currently under test. It is expected that the first live firing of the missile will take place later this year.

Deliveries of the Alarm missile to the Royal Air Force are expected to begin in 1987, with the final missiles expected to be handed over in mid-1989.

British Aerospace Dynamics group won the original contract in July 1983 to develop and supply 750 Alarm missiles for the RAF. British Aerospace won the contract against competition from the U.S. Texas Instruments' Harm high-speed anti-radiation missile. Harm would have been prodnced in partnership with Lucas Aerospace of the UK.

The four-year contract with British Aerospace was on a fixed-price basis with the figure of almost £300m based on the production of 2,000 missiles for the RAF and for export.

Tornado aircraft dedicated to anti-radar missions would carry up to nine missiles. The missiles use circuits that, if necessary, can be programmed in flight up to the moment of launch, to attack radar targets. The missile can fly direct to the radar target, or it can be instructed to climb to 40,000 feet, deploy a parachute and loiter silently for several minutes "listening" for radar emitters before glidng down to attack its chosen target.

Japan ia developing its own guided weapon industry. The Technical Research and Development Institute of the Japanese Self-Defence Agency is to start development of an infra-red terminal guidance system for the Mitsubishi ASM-1 air-to-ship missile.

In the Netherlands, Fokker has signed the first offset agreement with Raytheon, the U.S. prime contractor for the Patriot air defence missile system. This was after the Dutch Government ordered four Patriot fire units, 160 missiles and 20 launchers from the U.S. company.

The agreement between the two companies covers purchases over the next four years. Raytheon is to place orders with Fokker fo approximately U.S. $65m. Also, Raytheon is to buy approximately $50m in logistics services from Fokker for the Patriot system over the next 11 years.

West Germany, Denmark and the U.S. are considering a joint venture, through a memorandum of understanding, for the production of a "rolling airframe missile" (RAM) for ship-to-air use.

Four West German companies AEG-Telefunken, Bodenseewerk Geratetechnik, Diehl and Messerschmidt Bolkow Blohm have formed RAM-System, as the new company to act as the prime West German contractor for the missile. The company, with General Dynamics, is to be responsible for procurement of the missile for all three countries.

The U.S. may delay introduction of the Hughes Aircraft AMRAAM, the advanced medium range air-to-air missile until 1988, later than planned because of its high cost and technical complexity. This missile is a self-contained "fire-and-forget" weapon that acts independently of its carrier aircraft.

British Aerospace led a consortium recently which conducted a feasibility study into the prospects of the AMRAAM missile being produced in Europe.

The consortium, of British Aerospace, Marconi Defence Systems, Messerschmidt Bolkow Blohm and AEG-Telefunken concluded that production of the U.S.-designed missile in Europe was within the technical capabilities of the European partners. The consortium is studying the commercial viability of European production of the AMRAAM.

Sea Wolf

An associated but independent programme, the ASRAAM, advanced short range air-to-air missile, is under way in Europe with the UK, West Germany and Norway. In mid-April, the three countries, through the contracting authority for the missile programme, the Bundesamt Fur Wehrtechnik Bundbesghaffung (BWB) of West Germany, placed a prime contract wit hthe joint German/UK company, Bodenseewerk Geratetechnik British Aerospace (BBG) for a two-year project definition phase.

At the end of this period, tha three governments will take a decision on proceeding to the full development stage.

Major sub-contracts are expected under the current phase to be placed shortly by BBG with British Aerospace Dynamics at Hatfield, BGT of Uberlingen, West Germany and Raufoss Ammunis Jonsfabrikuer, Norway.

Consideration of a long-range stand-off missile is under way in the U.S. and Europe. The missile would decrease the vulnerability of attacking aircraft by enabling aircraft to attack heavily defended targets from a safa distance.

The aircraft would no longer have to overfly a target as many have to when on conventional bombing missions.

Three international consortia from the U.S., UK and eWst Germany submitted bids in February to the U.S. Air Force for a $8m feasibility study for the proposed "long-range stand-off missile," the LRSOM. The USAF is acting on behalf of the UK and West Germany as well as the U.S.

The two winning consortia were Boeing, leading a group with British Aerospace, GEC Avionics and Messerschmidt Bolkow Blohm, and a group led by General Dynamics, Convair division in a partnership led in the UK by Hunting Engineering with Thorn EMI Electronics, Ferranti, Plessey Avionics and Plessey Materials and Dornier of West Germany.

U.S. manned station programme under way

Space

PETER MARSH

JUST 24 YEARS after Yuri Gagarin, the Soviet Cosmonaut, became the first human being to leave the atmosphere, a range of startling new opportunities is opening up in the realm of space technology.

Activities in space over the next decade are likely to be dominated by efforts in the U.S. to build by the early 1990s a permanently manned space station to stay in orbit some 350 km above the Earth.

President Reagan last year gave the project his stamp of approval. Design work on the orbiting structure has started in recent months at four bases of the U.S. National Aeronautics and Space Administration.

Providing Congress allocates the funds, Nasa will spend $8bn by 1994 constructing the station, which should provide accommodation for about eight people and a range of laboratory modules for scientific work.

Extra cash

The U.S. is in detailed negotiations with other countries about the part they could play in building the structure. The European Space Agency (a consortium of 11 West European nations), Japan and Canada have all indicated they would like to put up extra cash to help in this work.

In return, they would gain a share in using the station's facilities, which would permit, for instance, research into low-gravity materials processing and space-based repairs to faulty satellites.

While the U.S. and its allies press ahead with their space-station work, other countries are also expanding their activities in space technology. The Soviet Union will probably place in orbit within the next two years a new orbiting complex to replace its current space station, Salyut-7.

Salyut-7 is nowhere near as sophisticated as the design on which the U.S. and its partners are working. For example, it has only rudimentary living accommodation and facilities for experiments. What is more, the Soviets lack a re-usable spacecraft along the lines of the U.S. space shuttle that can ferry people and materials from orbit to the earth.

For this job, the Soviet Union relies on small modules that drop to the ground by parachute after re-entry, a strategy that looks primitive by today's standards.

The new Soviet space station, however, is likely to be much larger than Salyut-7 and offer the Soviet Union the chance to keep people in orbit for longer periods than the current record of eight months, set up by three Soviet cosmonauts last year.

Soviet space engineers are also rumoured to be working on a version of the U.S. shuttle that would enable them to service an orbiting base more economically and with greater flexibility.

China, too, is making increased efforts in space technology. It has signed agreements with Britain and France over exchange of ideas in this area, relating to, for example, propulsion technologies and space science.

The country plans to set up its own network of TV-broadcasting satellites by the 1990s and to commercialise its Long-March-3 rocket by offering it to Western communications companies as a satellite launcher. India, Brazil and Indonesia are among the other nations that are seking greater autonomy in space activities. India is developing its own launcher and satellite technologies while the other two countries are buying telecommunications satellites from Western companies and operating them independently.

Western Europe is attempting to advance in space technology on two fronts, acting in collaboration with the U.S. over the space station while at the same time pursuing its own autonomous objectives under the auspices of the Paris-based European Space Agency.

At a meeting in Rome in January, Ministers from the agency's 11 members decided in principle to increase the organisation's annual budget over the next five years by 70 per cent to $1.4bn. A large share of the increase will be spent on Europe's contribution to the U.S. space station, assuming that ESA decides definitely to go ahead when the project's design stage finishes next year.

The European agency has earmarked some $2bn for this work, due to be spent building a laboratory module called Columbus that would plug into the American core of the orbiting structure. Japan and Canada, which like Western Europe have still firmly to commit themselves to joining in the U.S. project, could between them add another $2bn to the space-station programme.

While Columbus is geared very much to an initiative of the U.S., ESA planners envisage that it could evolve over 20 years or so into an independent unit that could give Europe its own space station.

Other parts of the European agency's long-term plan, thrashed out in January, are geared to space independence. The programme calls for greater spending on telecommunications and remote-sensing satellites. ESA is also due to spend a further $2bn over the next decade on a new form of the Ariane satellite launcher, called Ariane V.

Ariane has been developed since the early 1970s with about $750m from European governments (with France putting up 70 per cent of the cash) and has turned out to be one of the few genuine achievements in European technical collaboration.

The U.S. fleet of three Space Shuttles (a fourth vehicle, Atlantis, is due to make its maiden flight this September) wins hands-down over the Ariane development in terms of technical innovation, on the grounds of the craft's reusability.

Prowess

But currently the Shuttle and Ariana are roughly sharing the market for commercial satellite launches, now running at 15 to 20 year, which is a sign of the much greater prowess by Western Europe in space technology than anyone could have imagined even a decade ago.

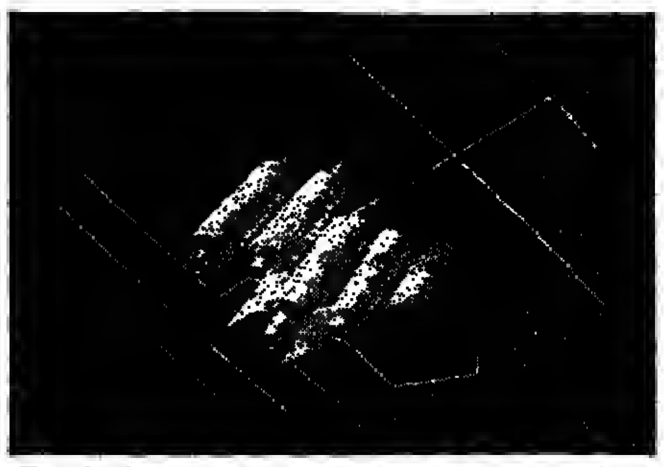
While the Shuttle fleet is operated through Nasa by the U.S. Government, marketing of Ariane is handled by Arianespace, a company based near Paris with a mixture of shareholders throughout Europe. Most are private companies though the most important (holding one-third of the shares) is France's national space agency, a government organisation.

Some of the U.S.'s biggest aerospace and satellite companies, are working with Nasa on the space-station programme.

Eight groups of engineering contractors, two led by Rockwell andn the others by McDonnell Douglas, Martin Marietta, Boeing, General Electric, RCA and TRW, are participating with Nasa centres in the design phase of the project. These companies are in line to pick up major shares in the development and construction work for the station when contracts for this are awarded from the end of next year.

The U.S. space industry may find more of its work coming from projects related to the space station and less from civilian satellite programmes, one result of the slackening demand for telecommunications satellites and the slower-than-expected take-off in the market in the U.S. and elsewhere for orbiting spacecraft for the direct transmission of TV to roof-top aerials.

Overshadowing civilian projects in space is the U.S. Strategic Defence Initiative (popularly known as Star Wars), a huge research programme over five years designed to test techniques to disable nuclear missiles while they are in flight. This project, on which the Department of Defense plans to spend $26bn to 1990, involves a wealth of advanced technologies, many of which overlap with those under study for the space-station work.



How the future U.S. Manned Space Station might look—a study prepared by Boeing Aerospace Company, showing the modules which could be used for living, laboratory and service quarters. Boeing is one of several major U.S. aerospace companies studying various configurations for the eventual space station.

Designers work on control systems for future

Avionics

LYNTON McLAIN

THE AIRCRAFT cockpit and control systems of the very near future will be largely unrecognisable to many of today's pilots.

Advances in airborne electronics, or avionics, have been startling rapid in the past five years. The latest airliners and combat aircraft now at the design and prototype stage are designed around the new avionics and pilots will have to take re-education courses to use them.

So important are the advances in avionics that even the design and aerodynamic behaviour of an aircraft in flight can be determined by the new airborne electronics. "The platform, the aircraft, is no longer as important as it used to be in terms of the design. The system design is now the more important part," British Aerospace says.

Aircraft no longer have to be a conventional shape and can be designed to fly safely tail-first. They no longer have to be inherently stable, or need large flight crews. Aircraft can use laser gyroscopes in place of conventional mechanical gyroscopes for navigation.

The most visible change in civil airliners is in the new cockpit. This is virtually devoid of the myriad dials common on today's aircraft. In their place are a small number of visual display units, small "television screens," displaying vital information about the aircraft, its route and even the weather in colourful shapes and patterns.

These changes in the cockpit are part of the revolution that has swept aeronautical design in the wake of the advances in avionics.

The increases in computer power have been instrumental in helping the developments in airborne electronics. Greater power has helped the designers of advanced cockpits to design instruments that cut the workload for the flight crew.

This has happened to such an extent that some aircraft, such as the McDonnell Douglas MD-80 series and the Airbus A320, are designed to be flown with two flight-deck crew only, a pilot and a co-pilot, compared with the more usual three crew.

The new designs in the cockpit also cut the number of instruments needed to monitor an aircraft in flight. One colour "television screen" can be designed to do several jobs simultaneously. The pilot merely presses a "soft key" and the screen becomes a "different" instrument, with different information displayed for as long as required.

The layout of the new "television-screen cockpit" is radically different from existing conventional aircraft cockpits and even the flying controls are different and can be in a different place.

Instruct

The changes to the flying controls and more importantly, the changes to the shape of aircraft and the way they can be flown, are possible because of "active control technology" (ACT), or "fly-by-wire" technology as a routine design option. Even fly-by-wire technology is being challenged, with the advances in fibre optics that are making fly-by-light a realistic possibility.

Active control technology uses electronic impulses, or light signal down an optical fibre to "instruct" a hydraulic drive to move a flying control surface, such as a rudder, a flap or an aileron. Aircraft fitted with ACT need have no mechanical linkages. The most notable recent active control technology aircraft was the ACT Jaguar from British Aerospace.

Fibre optics offer many advantages over conventional electrical or electronic signalling in an aircraft. The fibre optics are able to operate in complete electrical isolation, and are subject to no interference or jamming by enemy forces.

The active control systems constantly monitor an aircraft's attitude and its position in relation to the pilot's instructions and a set of "control laws" built into the computer software of the ACT computer "brain." The software, written on the ground from a knowledge of what the aircraft's structure and aerodynamic shape will tolerate from a pilot's demands, provide the essential limits to an aircraft's performance.

These constraints are vital because active control technology allows a pilot complete freedom, within the control laws, to fly the aircraft as vigorously in air combat or as smoothly in an airliner, as he wishes.

This contrasts with the deliberate built-in stability of existing aircraft, where the pilot has to work against this stability if he wants the aircraft to climb, dive, or turn.

By designing a fighter aircraft from the outset to be unstable, the designers are assisting the fighter pilot's wish to manoeuvre rapidly. When the pilot wishes to fly straight and level, in "stable" flight, the active control system, governed by the control laws in the computer, constantly adjust control surfaces and keep the deliberately-designed unstable aircraft in a stable condition.

The use of ACT has the further advantage that it allows the aircraft to be designed to be smaller and lighter than conventionally-designed stable aircraft.

Highly stressed

The possibility of making smaller wings, for example, but wings that are highly stressed, has opened up possibilities for new synthetic materials. These include carbon fibre epoxy materials and are being used on the new generation of agile combat aircraft.

The use of "ring laser gyroscopes" in place of rapidly-rotating mechanical gyroscopes is likely in aircraft of the future. The competition, especially in Europe, for these systems to be chosen for the new generation of airliners, missiles and combat aircraft is increasing.

Laser ring gyroscopes use lasers to follow paths drilled in small blocks of glass. Sensitive laser light detectors are used to detect the differences in the time the different laser beams take to travel a path when the gyroscope, and the aircraft it is in, move from a straight path. BAe plans to build production of its ring laser gyroscopes to 20 a month by the end of this year.

In France, the Societe Francaise d'Equipements pour la Navigation Aerienne, is making its laser gyroscopes for the military market and has plans to offer its system on an inertial navigation application for France's ACX experimental combat aircraft demonstrator.

In the UK, Rediffusion has produced an initial design concept for a "touch-activated simulator control" facility. The control system is claimed to be the first to combine touch-screen technology, where a trainee pilot simply touches a visual display unit to activate a simulated control, with microprocessor control.

The interaction between the touch-screen monitor and the micro-control eliminates the need for a manually activated search through pages of data to establish essential information about a simulated aircraft, or its environment. This information can be made available instantaneously. The first systems are expected to enter service next year.

Better methods set for take-off

New materials/ techniques

MICHAEL DONNE and LYNTON MCLAIN

THE BOW-WAVE of advanced technology in the world's aerospace industries, generated by the extensive research and development of new materials over recent years, is now being translated into production capabilities, aided by the parallel development of advanced manufacturing techniques such as robotics and other forms of computer-aided design and manufacture.

Composites of many kinds, involving the use of carbon fibres, fibre-glass, graphite and other materials, are now being employed increasingly to bring the ever-growing complexities of modern civil and military aircraft and missile design requirements to fruition.

The vast sums—running into hundreds of millions of pounds—spent throughout the U.S., UK and Western Europe over the past 10 to 15 years in the research into these new capabilities is now beginning to pay off, as they are translated into everyday production procedures. As a result, the entire world aerospace industry is starting to benefit.

The combination of new materials and new production techniques is enabling manufacturers to speed the fundamental design and development times of even thte most complex of aircraft and missile programmes, so cutting direct development costs.

At the same time, they are helping to reduce the weights of finished components, through refined design and manufacturing procedures that also reduce waste, and so help to reduce the costs of finished aircraft without in any way sacrificing essential strength, reliability and durability in both finished components and complete aircraft and missiles.

The research programme itself is by no means over. There are many new materials still under study or preliminary development that have not reached the stage of everyday acceptance by aerospace designers, but which hold the promise of significant further reductions in costs .

One is aluminium-lithium, the high-strength and low weight metal which, although given much publicity in recent years, has still to reach its full potential. Nevertheless, it offers considerabla promise and is expected before tha decade ends to be widely employed in aircraft structures.

Extensive work on the development of aluminium-lithium continues in both the UK by British Alcan Aluminium and in the U.S. by the Aluminum Company of America (Alcoa). This new material possesses a higher degree of strength and stiffness than other aluminum alloys, with a substantial saving in weight, and a high level of corrosion resistance.

All the major aerospace manufacturers—British Aerospace, Airbus, Boeing, Lockheed and McDonnell Douglas—have been studying aluminium-lithium with a view to eventually incorporating parts made with this material in their new-generation civil and military aircraft.

Purpose-built

British Aerospace, the biggest aerospace manufacturing group in Western Europe, is also a leading exponent of carbon fibre and other composites technology, with its Warton Division (home of the BAe Military Aircraft Group) as lead division in the BAe for this work.

Recently, a purpose-built factory was completed at Samlesbury to enlarge the production of carbon fibre and other composites, to cope with the ever-increasing percentage of such items on modern aircraft.

The present BAe workload in this area includes Harrier rudders and stabilisers, wings for the new Saab of Sweden JAS-39 fighter, and in the development of the Experimental Aircraft Programme (EAP), the "technology demonstrator" that is expected to be the forerunner of the multinational European programme for an advanced tactical combat aircraft for the early to mid-1990s.

BAe says that the advantages of carbon fibre composites in aerospace include a potential 30 per cent reduction in manufacturing costs, owing to the reduction in the number of detailed parts which have to be made.

They have a much greater strength-to-weight ratio; there is a marked reduction in the amount of material wasted because of the improved machining and other manufacturing techniques that become possible, especially the use of robotics. And, the group says, it can produce large, complex curved shapes in composites through the use of computer-aided design and manufacturing techniques (CADAM), in which BAe is also now highly advanced.

Short Brothers of Belfast, which in addition to its aircraft and missile manufacturing activities, has built up a large business in "aerostructures"—parts and components for aircraft, including engine nacelles and wings—has also developed extensive expertise in materials technology, especially in composite materials.

Some time ago, the company invested in a giant 110-ton "autoclave"—the largest of its kind in Europe—at its Belfast factory, for use in the high-temperature pressure adhesive bonding of metal and carbon fibre aircraft components. This is to produce a wide range of its own and other companies' civil and military products.

Westland, the UK helicopter manufacturer which is involved with Agusta of Italy on the EH-101 Sea King helicopter replacement programme, recently introduced a new £6m composites production facility at its Yeovil, Somerset, base. The factory will make advanced-design helicopter rotor blades in composite materials.

Westland has already earmarked a further £3m for expansion of the facility, which has been designed in such a way that extra space and equipment can be added to double output without disrupting production flows.

One of the major U.S. developers of aerospace uses for composite materials is Sikorsky, the major helicopter manufacturer, which emerged as a pioneer in the design and fabrication of composite structures in th eearly 1960s.

Rotor

Today, helicopters such as the military Black Hawk and S-76 civil helicopter make extensive use of a wide range of composite materials, while the company is now test-flying for the U.S. Army the Advanced Composite Airframe Programme (ACAP) helicopter, designed to demonstrate that basic composites design technology is sufficiently advanced to be used in the primary structures of helicopter airframes, where the aircraft's full weight is borne.

Sikorsky is now moving on to develop an all-composite helicopter rotor system, with composite blades and hub, and is looking further ahead to the development of a bearingless main rotor for possible use in aircraft of the future, such as the U.S. Army's LHX (Light Helicopter Experimental) programme.

Also in the U.S., Boeing Vertol, the manufacturer of large helicopters, and part of the Boeing Group, is also a specialist in carbon fibre and other composites. It is currently funding as a private venture its own Advanced Technology Helicopter Programme (ATHP), called the Boeing 360, to produce a large twin-engined, twin-rotor aircraft that will make extensive use of composites in the fuselage, landing gear, rotor hubs and blades and rotor controls, and in transmission housings and drive shafts.

Materials include Kevlar, glass-fibre and graphite. Boeing Vertol says that by using composites in the fuselage of the 360 it can achieve a weight saving of 25 per cent, a 45 per cent reduction in recurring costs, and a reduction in tooling costs of 90 per cent.

Allied Corporation of the U.S. which specialises in the development of advanced technology materials, has produced a new high-performance fibre, Spectre 900, which it claims is the strongest low-density—less than 1 gramme per cubic centimetre—the more of it used in a composite material, the lighter the end-product will be.

Other advantages include toughness, low moisture sensitivity and the highest abrasion resistance of any available reinforcing fibre. It is made from ultra-high-molecular weight polyethylene.

The new fibre's major limitation is its low melting point of 150 deg C, but Allied sees extensive aerospace applications for the material, especially where the end-use temperatures are acceptable. One use already under test is in radomes (the covers used to protect the antennae of airborne radar units). Spectre 900 can be used with graphite, aramid and glass fibres.

Allied Corporation has also developed some new metal alloys that may also have extensive uses in aerospace. These include aluminium alloys that double the use-temperature over those alloys currently in service, and increase corrosion resistance by a factor of five compared with standard ingot alloys.

Others include nickel alloys that are superior in hardness to high-speed steels at high temperatures (over 1,00 deg F) and demonstrate outstanding tensile and impact strength.

Extensive advances in the use of ceramics for aerospace purposes are already being achieved, and more dramatic improvements for the future are forecast: ceramics twice as strong as the strongest steel, able to work effectively at 1,500 deg C, more resistant to corrosion and wear, and nearly as light as aluminium.

The Fairey Holdings Group has just set up in the UK a new company, Fairey Tecramics, to exploit the group's expertise in high-performance ceramics. Fairey Tecramics is already carrying out a programme for advanced ceramics for gas-turbine aero-engines for the UK Ceramics Club (Gas Turbines), a three-way arrangement between Fairey, Rolls-Royce and the British Ceramic Research Association.

Aircraft design involves substantial sheet metal work, in aluminium, steel and titanium. BAe Aircraft group at Warton, Lancashire has designed an integrated flexible manufacturing control system, integrating automated equipment for the production of flat and formed metals.

The system is linked to e mainframe computer and has cut material usage by 10 per cent, reduced work in progress and material in progress by 80 per cent and has cut the stock-holding by three-quarters.

Superplastic forming is one of the new techniques used at British Aerospace Warton division, where combat aircraft are designed and made.

Superplasticity occurs in metals with a suitable micro-structure. At temperatures of about 50 per cent of melting point, the metal assumes a so-called "superplastic condition," where, under a load, the metal will deform at near constant stress.

With the metal in the superplastic condition and subjected to pressure, sheet and plate metal can be deformed in a bubble-like manner to fill a cavity tool. The advantages of superplastic forming include a reduction in the number of detail parts and reduced assembly and fabrication time leading to redneed manufacturing costs, parts that are repairable and tolerant to damage and weightsaving.

BAe also uses diffusion bonding. Here, when a number of suitable pieces of metal are pressed together at a critical temperature, the change in grain structure causes atomic diffusion across the joint line. The resulting local structure is that of a single piece of metal and the joint line "disappears."

So far, only titanium alloys are readily available for diffusion bonding of aircraft parts, but structures have been designed which are competitive with carbon fibre composites and with conventional aluminium alloy designs in terms of cost and weight.

● The impetus for change on the factory floor comes largely from the need for greater production efficiencies as aerospace development costs escalate amid rising international competition.

Changes in factory production techniques are also required to cope with the new aerodynamic, electronic and material design possibilities in aerospace. Here, technology is moving rapidly in new directions and is affecting the way products are made.

Advances in the understanding of aerodynamics and the potential of computers have made revolutionary changes possible in design.

The advances reduce the need for traditional mechanical components made by aerospace subcontractors and increase the need for new prodnotion techniques.

On the shop-floor, computer-aided techniques and a high degree of automation have become common features of the leading aerospace companies in Europe and the U.S., particularly in the manufacture of component parts, sub-assemblies and sheet metal work.

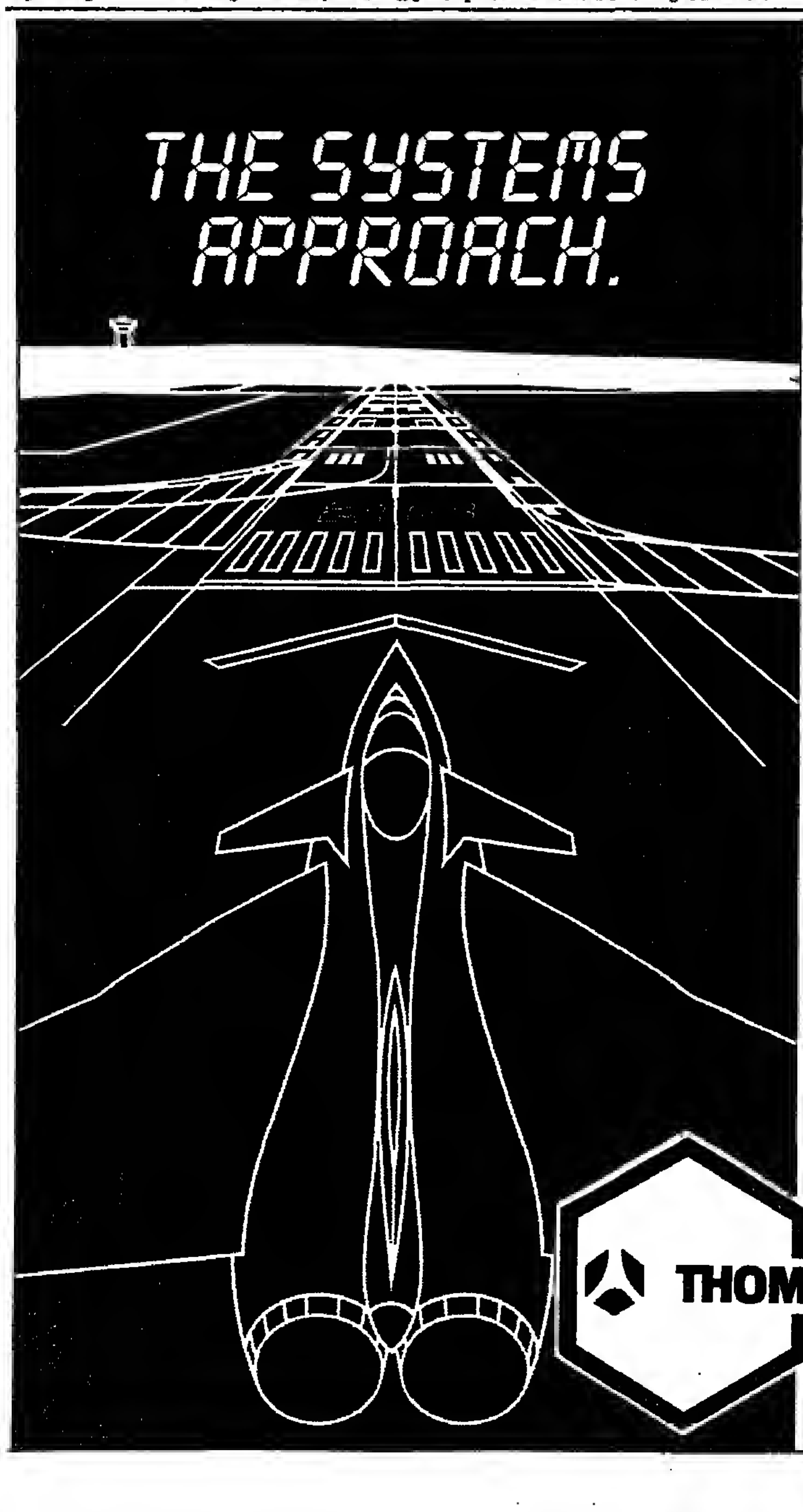
At British Aerospace, for example, the manufacturing time for some aircraft parts has been cut by 80 per cent by the use of advanced computer-controlled techniques.

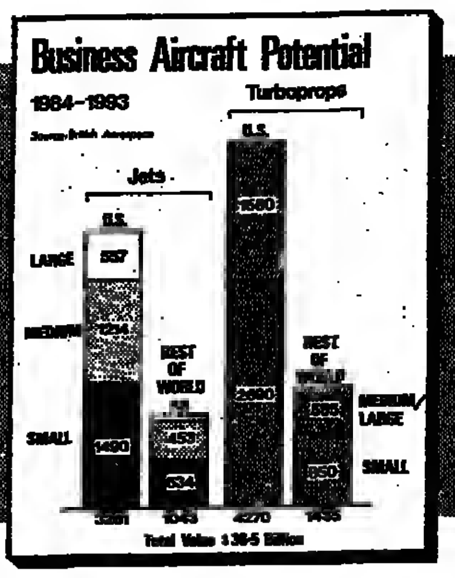
McDonnell Aircraft division of McDonnell Douglas in the U.S. illustrates how new manufacturing technology is combining with new aircraft materials to prodnce advanced aircraft parts. These can change the way entire aircraft are designed.

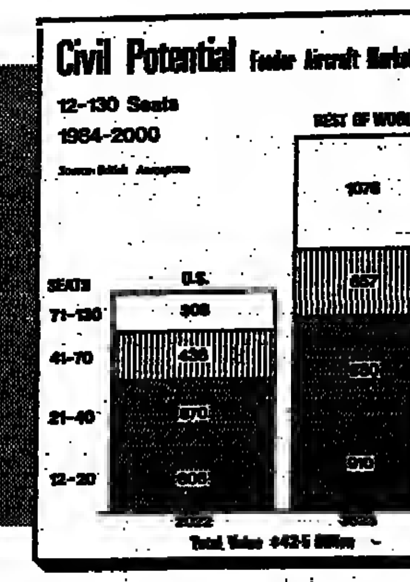
The corporation has combined composite material processing with robotic design. A robot cutter from ASEA of Sweden is used to trim excess material from aircraft parts made of composites, to within 15 thousandths of an inch of blueprint dimensions. The cutting speed is over 60 inches a minute.

At Rolls-Royce, the UK state-owned aero-engine manufacturer, advances that the company foresees in the the design of aero engines over the next 15 years are driving it towards the development of advanced new manufacturing and inspection techniques.

Rolls-Royce is aiming for a "no eyes" inspection strategy. This is designed to eliminate completely the human eye and brain as the prime inspectors. In their place computers will do the inspecting based on a range of sensors.







Sector noses up out of slump

General aviation

LYNTON MCLAIN

MANUFACTURERS AT the light end of the world aerospace market—meeting business and general aviation needs for small aircraft with fewer than about a dozen seats—hope a trough may have been reached in one of the sharpest slumps in demand the industry has seen.

Demand for business and general aviation aircraft, from the smartest four-engine business jet to the humblest single piston engine light aircraft, plummeted from a 20-year peak in 1978 to an all-time low last year.

In 1978, the business and general aviation industry in the U.S., the traditional home of light aircraft, delivered 17,811 new aircraft. Last year, after a sustained dive in demand, the industry delivered a mere 2,438 new aircraft.

Inflation and a change in the pattern of orders left the industry last year with total sales of $1.698bn from these deliveries. This compared with the $1.78bn value of sales in 1978. The business jet sector was the only individual sector to increase its deliveries last year, with a 20.4 per cent rise in deliveries to bring the total number of business jets delivered by the U.S. industry to 371 aircraft.

This business jet sector gave the business and general aviation aircraft industry in the U.S. as a whole its 15.6 per cent increase in sales value, compared with 1983. The 9.4 per cent decline in the number of aircraft delivered, however, underlined the still weak state of industry demand overall.

Demand in December 1984 was up by 20.3 per cent compared with the previous December and gave the industry its strongest December performance since 1981.

Improvement

This end-of-year improvement was insufficient to enable the industry to match the forecast demand of 3,245 new aircraft in 1984.

"I think 1983 and 1984 will be remembered as the bottom of the slump," says Mr Edward W. Stimpson, president of the General Aviation Manufacturers' Association, which represents 37 U.S. manufacturers of aircraft, engines, electronics, and related components for business, personal and commercial aviattion.

He forecast total sales this year of between $1.8bn and $1.9bn on delivery of about 2,438 aircraft, the same number as last year.

Four policy issues faced the industry in the U.S. this year, Mr Frank Adams, the GAMA chairman, from Bendix Aerospace, said. These were proposals for tax reform affecting capital investment, a threat to the funds for modernisation of airports and airways, public policy and industry costs relating to product liability and continuing international trade problems.

Trade problems were emphasised by the 34.5 per cent fall in exports by the industry last year, to 336 aircraft, compared with the export of 513 aircraft in 1983.

U.S. exports accounted for 13.8 per cent of total deliveries last year and 15.4 per cent of sales. Three years ago, the industry exported almost 30 per cent of industry output, by value and by aircraft.

The recovery of the U.S. industry this year has been slower than forecast. Deliveries of general aviation aircraft in the first quarter to the end of March, were the lowest in the recent history of the industry. Deliveries were 12.8 per cent down, at 457 aircraft.

The General Aviation Manufacturers Association attributes the downturn to the impact of proposed tax changes in the U.S. and temporary new tax regulations. New taxes are being considered for certain uses of business aircraft regarded as fringe benefits.

Deliveries

In the first quarter, business jet deliveries rose 11.1 per cent compared with the previous year; deliveries of turboprop aircraft rose 49 per cent, after limited sales last year; twin-piston engine aircraft deliveries fell by 43.2 per cent, and single-piston engine aircraft deliveries fell by 15.6 per cent.

Many of the leading U.S. business and general aviation aircraft makers have had to make changes in the face of the recent slump in demand.

The Gulfstream Aerospace corporation stopped production of its Commander range of business aircraft at its Bethany, Oklahoma, factory. The decision comes after the company delivered 21 Commander 840, 900 and 1,000 series aircraft last year. This compares with the delivery of 35 Commander turboprop aircraft in 1983 and 54 Commanders in 1982.

These deliveries compare with the peak deliveries of the turboprop Commander in 1979 when the former producer, Rockwell International, delivered 96 aircraft. Gulfstream Aerospace acquired the Bethany plant in 1981 and delivered 91 turboprop Commanders that year.

The Commander production line is "for sale" according to Gulfstream Aerospace and this will leave Gulfstream with two aircraft programmes. These are the development of the single turbo-fan engine Peregrine aircraft at the Bethany, Oklahoma, factory and continued prodnction of Gulfstream 3 and Gulfstream 4 aircraft at Gulfstream's headquarters at Savannah.

The programme for development of the Peregrine aircraft was suspended by Gulfstream Aerospace in March for financial reasons.

Gulfstream Aerospace's Rolls-Royce Tay engine-powered corporate business jet, the Gulfstream 4, is scheduled to be rolled-ont in October. First deliveries are likely to be made in the middle of next year. The company has 74 signed contracts for the aircraft.

Two other U.S. manufacturers of general aviation aircraft, Piper Aircraft and Gates Learjet, have also taken steps to cut production of aircraft. Piper Aircraft ended production of its Aerostar twin-piston engine aircraft late last year and the company announced the closure of its Pennsylvania factory in response to a shrinking market and a "significant excess production capacity."

Piper Aircraft corporation, part of Lear Siegler, also closed its factory at Lock Haven last year and is to phase out its Lakeland, Florida factory in the first eight months of 1985. Production lines and tooling from the Lakeland works will be transferred to Vero Beach, Florida, the company's headquarters by October 1.

Piper will move production of the turboprop Cheyenne 400 LS, the Cheyenne 3A and the T-1040 and the piston-engine-powered Chieftain to Vero Beach, the company's only remaining manufacturing factory, this summer.

Piper Aircraft delivered a total of 664 light, business and general aviation aircraft last year. This compares with the delivery of over 5,000 Piper aircraft in 1979.

Gates Learjet also stopped production of aircraft, with its decision last year to halt its model 20, 30 and 50 series aircraft. The company was not expected to restart production of its business jet aircraft until the second quarter this year, but subsequently did resume production of the series 30 executive Learjet in the first quarter.

Gates Learjet delivered 73 new executive and business aircraft last year. This compares with 45 new aircraft delivered in 1983.

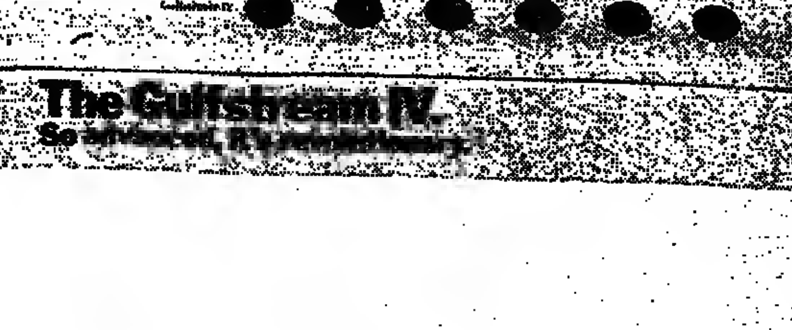
Executive

Other changes in the industry include the decision by the Sabreliner Corporation of St Louis, U.S., to discuss its Sabreliner 85 corporate business jet aircraft programma with other aircraft manufacturers in the U.S. and in Europe, with a view to companies joining the programme.

Elsewhere, Japan's growing aerospace industry is about to enter the market for executive business jet aircraft, with Mitsubishi Aircraft International's new Diamond 2 business. Certification of the aircraft is scheduled for the second quarter 1985, with the first deliveries set to begin in the third quarter this year.

Neiva Industria Aeronautica, a subsidiary of the Brazilian Embraer aircraft company, has started work on its N-821 Caraje twin-turboprop business aircraft.

The company acquired the rights to this conversion of the Piper Navajo aircraft last year and replaced the two Avco Lycoming piston engines with two Pratt & Whitney of Canada PT6A-27 turboprop engines at 550 shaft horsepower. The six to eight-seat aircraft is already in service in Brazil.



On the next seven pages Financial Times correspondents look at the position and prospects for aerospace industries in the major manufacturing countries and in other parts of the world

Diversification in the air

The U.S.

PAUL TAYLOR

A WAVE of takeovers, corporate auctions and a multi-billion dollar merger have injected a new note of frenzy into the U.S. aerospace sector, an industry which already has bulging military and civil order-books, and is participating in massive new projects and the challenge of new technologies and materials.

Last year, McDonnell Douglas acquired Hughes Helicopter for $470m. Since then the St Louis-based group has not only announced a major expansion of the Hughes operation but embarked on a separate high-technology buying spree aimed at building up a new information systems group. The stated objective is to turn it into a second major business line by the 1990's.

In March, four days after completing its $1.4bn acquisition of Avco, Textron put Bell Helicopter up fer sale in a move that took Wall Street by surprise. The decision to sell Bell, which retains the largest share of a currently depressed commercial market, appears to reflect the conglomerate's decision to concentrate on its remaining Bell Aerospace rocket engine and electronics business coupled with Avco's engine and aerospace operations.

Then last month Hughes Aircraft, the major U.S. defence electronics and space group, went under the auctioneer's hammer after its long-standing owners, the Howard Hughes Medical Institute, decided to put the $4.9bn-a-year company up for sale.

The previous day, on May 15, Allied Corporation and Signal Companies, both with extensive aerospace interests, agreed to merge in a $5bn deal which will create a new electronics and motive giant.

Announcing the deal, the biggest ever industrial merger, Mr Edward Hennessy, Allied's chairman, declared: "We are going to be in every aeroplane that flies." His comments highlight the major aerospace thrust behind the new company.

Several key factors are driving this mammoth re-alignment of the industry, which is also leading to a wide range of national and international joint venture agreements. Among them are the continuing marriage of advanced electronics and traditional aerospace manufacturing activities, the huge costs of research and development to keep pace with new materials development and customer requirements, fierce competitive pressures and the tremendous promise and profit potential for the industry leaders and contract winners.

Even in the until-recently depressed civil jet transport and general aviation markets, the industry is beginning to feel more comfortable as airline traffic continues to grow, airline results improve, helped by innovative wage pacts, and older aircraft require replacing.

Last year, although civil transport deliveries dropped for the third year in a row, new orders began to flood in bringing the promise of higher deliveries and profits this year and later.

Indeed, despite a slight decline in new deliveries last year, McDonnell Douglas, which booked 103 orders for its MD-80 series ef twin-engined jets and bas recently introduced two new versions of the aircraft, the Douglas Aircraft unit, was profitable for the first time since its acquisition in 1967.

But McDonnell Douglas, which has kept alive its DC-10 programme with the help of soon-to-be completed Pentagon orders for the KC-10 military versien coupled with one commercial order for six DC-10s from Federal Express, will soon have to decide whether te remain in the wide-bodied jet business.

The company has en the drawing board plans for a new derivative called the MD-11, but without firm erders it has warned it may pull out of this sector of the market next year.

Following Lockheed's earlier withdrawal from the wide-bodied jet business, such a move would be excellent news fer Boeing, and Airbus, its European arch-rival.

Boeing, which is also pursuing a range of new derivative models and a new medium-sized jet liner with Japanese partners, recorded 161 jet transport orders last year compared with 151 in 1983. At the end of the first quarter its firm order book totalled $21.6bn with 74 per cent of the total marked down fer commercial customers and fereign governments.

In the aero engines and military aerospace markets, business is also humming, desplte the threat of a slowdown in the pace of growth of defence spending and the highly-publicised attempts by the Pentagon and Congress to get to grips with overcharging, shoddy workmanship and alleged dubious accounting practices.

Decision

At Pratt and Whitney, part of the International Aero Engines consortium which is building a new 25,000 lbs thrust engine, higher commercial engine and spare part sales last year offset a decline in military engine shipments which partly reflected the Pentagon's decision to award rival General Electric a substantially larger slice of the military market.

Meanwhile, the recent furore over General Dynamics' billing practices could bring benefits to Nerthrop which in April siezed the initiative and offered its ill-fated F-20 Tigershark fighter to replace some of GD's more expensive F16s. Such an erder would be a major boost to Northrop which, despite forceful marketing in the U.S. and overseas, has yet to win an order for the F-20.

Northrop, as the main contractor for the controversial advanced technology bomber (the radar-evading stealth bomber), could also be a major winner if Congress decides later this year to end production of Rockwell International's B-1 programme after the first 100 of the latest B1-B bombers go into service.

Perhaps in anticipation of such a decision, already implicit in Federal budgets, Rockwell recently paid $1.6bn for Allen-Bradley, an industrial automation concern, in a move which typifies the current wave of diversification within the aerospace sector.

But whatever the outcome of the "B-1 battle" Rockwell and the other major U.S. aerospace groups will still have plenty of military and space work to do aside from existing programmes.

For example, United Technologies's Sikorsky recently began building a composites components plant to support its all composite-airframe helicopter (ACAP) programme.

The ACAP is designed to support UT's bid in the fiercely contested U.S. army's light helicopter experimental (LHX) competition. The LHX programme is expected to lead to production of 7,000 machines worth about $35bn.

Other major new ventures include the joint Bell-Boeing V-22 "tilt-rotor" aircraft designed under the joint services advanced vertical lift, or JVX programme, the MX missile programme and space projects such as the manned space-station and highly-controversial Strategic Defense Initiative—Star Wars.

Taken together with existing military programmes and a projected surge in new commercial business, most Wall Street analysts and industry leaders are projecting a rosy future in a highly dynamic industry.

U.S. AEROSPACE COMPANIES—1984 RESULTS

	1984 sales ($m)	1983 sales ($m)	% change on year	1984 earnings ($m)	1983 earnings ($m)	% change on year	1984 total backlog ($bn)	1984 funded backlog ($bn)	1983 total backlog ($bn)	1983 funded backlog ($bn)
Boeing	10,354.0	11,129.0	−6.96	787.0*	355.0	+121.7	21.5	n.a.	18.0	n.a.
McDonnell Douglas	9,962.6	8,111.6	+22.8	325.3	274.9	+18.3	22.5	15.0	17.2	10.7
Lockheed	8,113.4	6,490.3	+25.0	344.1	262.8	+30.9	22.8	9.4	19.6	7.7
Grumman	2,603.6	2,254.8	+15.5	108.4	110.7	−2.1	6.2	5.0	4.5	n.a.
Northrop	3,690.0	3,260.0	+13.2	166.9	100.7	+65.7	3.98	n.a.	3.24	n.a.

* One-time gain of $387m.

Paradox of partners and rivals

France

DAVID MARSH

A MORE optimistic outlook for the French aerospace industry has been signalled by a sharp overall increase in orders last year after the doldrums of 1982-83. Additionally there are signs of movement in at least some ef the series ef international collaboration deals in which France is involved.

Aerospatiale, the state-owned aerospace group which is active in all sectors of the industry from airliners to space rocketry and ballistic missiles, set the tone last year by boosting orders 57 per cent and returning to a FFr 330m profit ($34.4m) after a loss of FFr 357m in 1983.

For the entire aerospace industry which provides work for about 128,000 people and has turnover of FFr 65bn, export orders provided a much-needed ray of sunshine last year. Internatienal orders rose to FFr 38bn from FFr 23bn in the highly depressed year of 1983, with the domestic market still adversely affected by the squeeze in the French defence budget.

The main plus-points fer the French industry over the past year have been the continued commercial success of the Ariane space rocket which is 60 per cent financed by France; the $1.4bn order won by engine maker Snecma to re-equip mid-air refuelling aircraft for the U.S. Air Ferce; and a recovery in the fortunes of the European Airbus consortium in its increasingly intense battle with Boeing.

In spite of the improvement in key market sectors, the French aerospace industry remains beset by eballenges which basically boil down to one fundamental problem: too many international companies are chasing orders which are becoming ever more difficult to win.

The greatest controversy remains attached to France's role in the five-nation European advanced jet fighter project. Government officials on both the French and British sides are deing their best to play down hints of strong disagreement.

But Dassault-Breguet, the state-controlled manufacturer of the Mirage jet range, has been adamantly insisting on a 46 per cent share in the project tegether with design leadership—a position which both Britain and West Germany find unacceptable.

Even after some tempering of Dassault's strong-arm tactics by the officials in the Defence Ministry charged with negotiating the deal, the French stance still looks likely to hold up er perhaps prevent altogether agreement on the project.

Meanwhile, Dassault is making clear it is capable technically ef building the plan itself on the basis of the Avion de Combat Experimental now at the prototype stage.

Another collaboration deal—altheugh much less complex and involving smaller sums of money, has just been launched on a happier note. This is for a tactical troop helicopter fer army and navy use by Nato countries in the 1990s, In which Aerospatiale is jeining forces with Westland and Messerschmitt-Balkow-Bohn as well as Augusta and Fokker.

Additionally, the decision by European technology Ministers at the end of January to give the go-ahead for the Ariane-5 rocket programme for the 1990s has given a powerful boost to Societe Europeenne de Propulsion, Europe's leading rocket motor maker, which has just floated part of its shares on the Paris bourse.

However, the paradox over the increased tendency towards collaboration is that companies which are partners in some areas are becoming ever more bitter rivals in other sectors.

Dassault-Bregeut, for instance, which like the top brass in the French Air Force has been worried over slower-than-projected ordering of the new Mirage 2000 jet for France's own use, has been making an extra effort to win export markets.

French persistence—and the strong financial links between Paris ad Riyadh built up in recent years—looks likely to pay off with an order for perhaps 40 Mirage 2000s for Saudi Arabia. Up to a few months ago, British Aerospace and its partners in the rival Tornado grouping believed the Saudi order was due to go their way.

A further boost for French hopes could come from India's just-announced decision not to buy helicopters from Westland, which could allow in the Dauphin machine manufactured by Aerospatials.

Meanwhile, in the space business, competition for scarce satellite orders is increasingly pitching the British Aerospace Matra consortium against Aerospatiale and its main European partner MBB.

Concern at dangers to competitiveness

The UK

MICHAEL DONNE

THE UK aerospace industry is the second largest (outside the U.S.) in the Western world, with a turnover in 1984 of more than £5.5bn and exports of close to £3.2bn in 1983 (the 1984 figure is expected to exceed that total when final returns are available).

For many years past, the industry has produced a substantial annual contribution to the national trade balance—despite the import of airliners such as Boeing 747 Jumbo jets, Boeing 767s, 757s and 737s by UK airlines because of lack of comparable types available from the home manufacturers.

At the same time, the industry has significantly improved its share of an expanding world trade in aerospace, despite increasingly fierce foreign competition, especially from the U.S.

In the 1960s, the UK aerospace industry's share of the Western world's aerospace trade amounted to about 10 per cent. In the 1970s, this rose to 14 per cent, and today it is nearly 17 per cent.

Over that same period, the world demand for aerospace products increased significantly, due to overseas countries needing increasingly sophisticated air weapons, including aircraft and missiles and other weapons, in ever greater quantities, and to the steady expansion (allowing for the effects of the world trade recession, which are now passing) of the world air transport industry.

The Society of British Aerospace Companies, the trade association of the UK aerospace industry, representing not only airframe, engine, missile and spacecraft manufacturers but also many companies in the equipment, avionics, electronics and associated industries, points out that foreign competition is increasing all the time.

"Today, France, Germany, Italy, Sweden, Holland, Spain, Belgium, Japan, Canada Australia, Israel, India, and Brazil all possess highly-developed aerospace industries" says the SBAC.

"In addition, Indonesia, Egypt, Chile and Argentina are developing their industries apace. All of these countries, and many Warsaw Pact countries, compete in the aerospace market place."

The SBAC points out that the UK industry must export well over 50 per cent of its turnover, as the aerospace requirements of its own armed forces and domestic airlines cannot sustain the industry in its present shape and size, with over 200,000 employees.

By contrast, the U.S. aerospace industry has a massive home market, and exports only about 23 per cent of its turnover—but relies on that export trade for its profits and future research and development investment income.

The SBAC's view is that, if the UK is not to lose its market share, despite the growing foreign competition, its companies should not be disadvantaged relative to those of its competitors. The industry looks to the future with cautious optimism, but says there "is some concern over a number of factors which threatens to erode its competitiveness."

These include the now huge investment programmes necessary for major civil and military programmes; the need for better insurance cover on big foreign civil and military orders; the growing problem of foreign customers' demands for "offsets," which can often exceed the overall value of a given contract; the growing shortages of advanced technological skills in the industry, with inadequate emphasis being placed by government on the need to train highly-skilled labour in schools and universities; inadequate resources for advanced research and development; and the continued peaks and troughs in production due to inadequate and timely forward government planning on new military programmes.

The UK industry believes strongly that it should become involved in future international collaborative programmes — which it sees as the only way ahead in ventures costing many hundreds, if not thousands, of millions of dollars or pounds to develop.

Such ventures include the European Airbus, the European Fighter Aircraft (EFA) programme, the Anglo-Italian EH-101 European anti-submarine warfare helicopter venture, and the new International Aero-Engines V-2500 engine for the next generation of 150-seater airliners.

"Not to be so involved would mean that the industry's role would in due course be reduced to that of sub-contracting," it declares. But, at the same time, it is recognised that many of those programmes require a continued high level of Government financial support, often with no guarantee of profits for many years into the future.

Foreign aerospace industries benefit from a much greater share of their Government funding than does the UK industry.

"It is appreciated that the Government's resources are finite," says the SBAC, "and that there are innumerable claims upon them. But if our industry is to prosper as a wealth-producing industry in the face of intense worldwide competition, government support comparable to that given to our competitors must be given to our companies."

One arena in particular is of deep concern to the UK industry—the increase in the number of collaborative programmes that have their centres located on the Continent, with European aerospace industries, even though the UK contributes substantial sums to those ventures.

The European Space Agency is centred in Paris, as is the European Airbus Industrie airliner manufacturing group. The Panavia group building the Tornado is centred on Munich. There is a danger, in the UK industry's view, that any future European Fighter Aircraft (EFA) venture, might also be centred on some European location — Munich, Paris, or Toulouse, even though Britain is likely to be a major contributor to such a programme.

There is a growing feeling in the UK industry that any future European collaborative ventures, whether in aircraft (civil or military), engines, guided weapons, or space, ought to be centrally located in the UK—not necessarily involving UK design leadership, but simply as the administrative focal point of the programme.

This, it is believed, would ensure that an even balance is struck between the UK and those other collaborative ventures that have their central locations on the Continent.

That the UK industry is succeeding is evidenced by the 1984 results of British Aerospace itself, with sales of close to £2.5bn, against £2.3bn in 1983, and trading profits of over £166m against £112m.

The biggest single contributor to BAe's results was military aircraft and support services, with sales of close to £1bn in 1984, closely followed by guided weapons and electronics systems at over £791m. Civil aircraft sales amounted to £572m, with space accounting for just over £109m.

Short Brothers, of Belfast, is also steadily expanding, with a turnover in 1984 of about £200m. The company's activities cover a wide spectrum of civil aircraft (the Type 330 and 360-short range regional airliners), missiles and "aerostructures," including wings, fuselage parts and engine nacelles and systems for many different foreign designed aircraft.

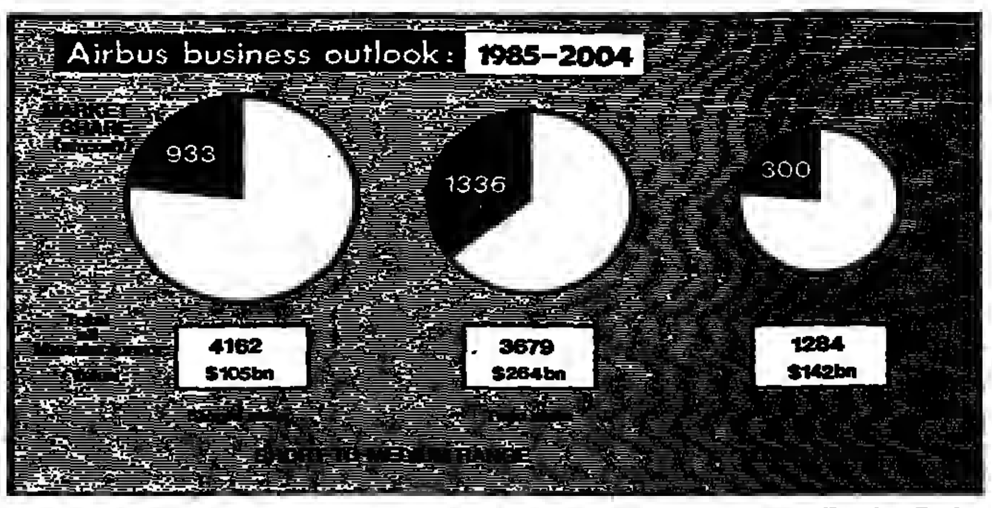
Shorts has recently won the RAF's competition for a new basic trainer, with the Brazilian-designed Embraer Tucano, which will substantially improve the company's position.

Shorts is also now planning a new regional and commuter airliner, the 45-seat Type 450, in conjunction with Embraer, to maintain its current market dominance in this field.

The UK industry is also doing well in other arenas. Edgley Aircraft, whose small, light Optica observation aircraft has recently been awarded its Airworthiness Certificate, has won orders worldwide for more than 80 aircraft worth over £8m. The Optica is unique in that it has been funded entirely from private and institutional sources, without Government support.

Another unique venture is Airship Industries, now majority owned by the Australian Bond Corporation Holdings, which is manufacturing lighter-than-air craft, designed for such uses as aerial advertising and TV platforms, tourist transport and coastguard and other suveillance roles.

The company's Skyships have made a major impact in the U.S. where one craft was used to give TV coverage of the Olympic Games, as well as in Canada and Japan.



Airbus Industrie, the European airliner manufacturer that is successfully challenging Boeing in the short-to-medium range market, forecasts substantial world demand for new airliners of all kinds through the rest of this century—9,125 aircraft worth over $500 billions. Airbus hopes to win orders for more than 2,500 aircraft or close on one-third of the total

Balance changed by powerful new rival

West Germany

PETER BRUCE

QUITE SUDDENLY, the balance of the aerospace industry in West eGrmany has changed. Messeschmitz - Bolkow - Blohm (MBB), for decades by far the most dominant producer, with annual sales of about DM 7bn ($2.2bn) has a new and very powerful rival — Daimler-Benz, the country's best known carmaker, with sales last year of DM43.2bn.

Daimler has bought, in the last two months, control of Motoren-und Turbinen-Union (MTU), Germany's biggest aero engine manufacturer, and Dornier, the family-owned aircraft builder and until now, very much a poor second cousin to MBB. The purchases, it is believed, have cost Stuttgart-based Daimler-Benz about DM 1bn and add more than 20,000 people to its workforce.

Held up

The Dornier purchase was being held up at the moment largely because one member of the divided family that owns it, Herr Claudius Dornier, first insisted on his right to have first refusal on any shares sold by other family members.

Claudius, however, was recently so desperate to see his pet private project, a seaplane, in the air that he was trying to sell his own stake in the company and it seems likely that the final resolution of his dispute with Daimler has involved securing finance to complete the seaplane project.

But even if Daimler-Benz's first step into the aerospace business is to build an aircraft (Claudius's seaplane) that few experts believe will ever find a place in the markets, the same experts believe merely owning Dornier would be worth it. The company, with sales last year of DM 1.5bn, is a high-tech treasure trove.

Besides producing one of Europe's most successful post-war jet trainers, the Alpha-jet and the popular Dornier 228 general-purpose transport aircraft, Dornier holds avionics maintenance contracts on Nato's AWACS aircraft, it is heavily involved in design work for the New European Fighter Aircraft (EFA), it designs and builds a range of missiles and drones, is prime contractor in the European remote sensing satellite (ERS-1) programme and two other space projects, and it acts as a subcontractor in the U.S. Spacelab and European Ariane projects.

Pioneering

Dornier has also done pioneering work in areas outside aerospace, including ceramics (which complements Daimler-Benz's own work on ceramic engine parts) and has developed and successfully marketed a machine which destroys kidney stones by bombarding them with shock waves.

In MTU, which Daimler owned with MAN until it bought the Augsburg-based truck producer out earlier this year, Daimler has a virtual monopoly in any German participation in joint aero engine production in Europe.

MTU has built the Rolls-Royce-designed RB-199, which powers the Tornado, and it is inconceivable that the division will not end up with a healthy share of the engine contracts once the design of the EFA is finalised between the two main protagonists, Britain and France.

But there is another, possibly more important dimension to Daimler's emergence as a force in aerospace than the obviously economic one. It is political. For a start, the Defence Ministry in Bonn has made no secret of its approval of the Daimler-Dornier takover.

Many defence procurement officials regard the MBB arms empire — which is threatening to further expand with its bid for Krauss Maffei, the country's major main battle tank builder —with deep suspicion. The prospect of having Dornier and and MTU as part of a competitive and very powerful group, capable of challenging MBB if needs be, seems to have won broad acceptance in Bonn.

The most important political aspect of Daimler's entance into aerospace, however, is that it sets the scene for a high-technology race between Germany's two 'Sunbelt' states in the south, Baden-Wuerttemberg, home to Daimler-Benz and Dornier, and Bavaria, MBB's home state. Both states are run by powerful conservative politicians determined to transform their laender into Germany's industrial powerhouses.

Bid

In fact, it was Herr Lothar Spaeth, Prime Minister of Baden-Wuerttemberg, who drew Daimler-Benz into making a bid for Dornier, which he feared was on the verge of being seduced into Bavaria by his rival, Herr Franz Josef Strauss. Herr Strauss, for his part, has been moving heaven and earth to try to help MBB, based in Munich, buy nearby Krauss Maffei.

Leaders in West Germany's states do not make foreign policy but they have begun to spend a great deal of time in recent years on personal pilgrimages to potential export markets for goods produced in their states.

It seems highly likely now that with the enthusiastic backing of Baden-Wuerttemberg (which will take a 4 per cent stake in Dornier if the Daimler purchase goes through) Daimler and Dornier will be pushed to even greater lengths to ensure they make their collective mark in aerospace.

And that could just include new aircraft and even helicopters, a market which Dornier, much to the chagrin of many senior employees cowed by the dominance of the Dornier family, have never entered.

Advanced capabilities across wide spectrum

Soviet Union

MICHAEL DONNE

THE SOVIET aerospace industry is the biggest in the world outside the U.S. and has exceptionally advanced capabilities across the entire spectrum of aerospace activities, including civil and military aircraft, guided weapons and space.

The industry is not only largely self-sufficient for the Soviet Union's own needs, acquiring little from other countries in the way of equipment (although it is a voracious gatherer of information on Western technology), but is also the biggest single supplier to most of the Warsaw Pact countries.

Indeed, it is the sole supplier where military aircraft are concerned, although some Western civil aircraft are used (and built under licence) in Romania, such as UK One-Eleven jet airliners.

Detailed statistics for the size of the Soviet industry are almost non-existent, but there is no question that it is capable of manufacturing hundreds of aircraft of all kinds every year, through the big "design bureaux," which in effect are major divisions of the industry specialising in particular types of aircraft.

These bureaux include Antonov, specialising in transport aircraft for both civil and military roles; Beriev, a builder of amphibious aircraft; Ilyushin, also a transport aircraft builder, but whose output includes long-range maritime patrol aircraft; Kamov, a helicopter manufacturer; Mig, the famous fighter manufacturer; Mil, also a helicopter manufacturer; Myasishchev, a bomber builder; Sukhoi, also a major fighter manufacturer; Tupolev, the transport and bomber manufacturer (which designed and built the unsuccessful Tu-144 supersonic airliner "Concordski"); and Yakovlev, both a fighter and a transport aircraft builder.

Engine designers and manufacturers include the Leningrad Gas Dynamics Laboratory, responsible for rocket and space launcher engines; Glushenkov, making turbo-prop and turbo-shaft engines for light transports and helicopters; Isayev, responsible for rocket engines; Isotov, also a helicopter engine designer; Ivchenko, which designs and builds transport jet engines; and Kuznetsov, Lotarev, Soloviev and Tumansky who between them manufacture most of the major turbo-prop and turbo-fan engines used in the Soviet Union.

This range of design and manufacturing bureaux spans virtually every kind of civil and military aircraft and helicopters it is possible to find, although there are some gaps in the spectrum.

The Soviet Union, surprisingly for such a vast country with great distances over which air communications must be maintained, has not yet developed an aircraft to rival the U.S. Boeing 747, although it has built the smaller four-engined Ilyushin IL-62 which has been for many years the mainstay of Soviet long-range commercial transport, and the more recent Ilyushin Il-86 medium-range 350-passenger four-engined jet transport. This has been widely regarded as the Soviet equivalent of the A-300 Airbus, with a longer range model, the Il-96, under development.

In helicopters, the Mil Mi-26 is currently the biggest helicopter in the world, capable of lifting 22 tons, but this will be outpaced next year when the U.S. Boeing XCH-62 flies, capable of carrying up to 35 tons.

In military combat aircraft, it is widely recognised that Soviet capabilities are exceptionally high, especially in the Mig range, with the latest single-seat Mig-29 Fulcrum whcih is regarded as comparable to the U.S. F-16, the two-seat Mig-31 Foxhound, and Sukhoi S-27 Flanker (equivalent to the U.S. F-15 Eagle).

In bombers, the Tupolev variable - geometry (swing-wing) Backfire supersonic aircraft is highly respected by Nato, with a new supersonic bomber, the Tupolev swing-wing Blackjack now under development, which is believed to be broadly comparable to the U.S. Rockwell B-1B strategic long-range aircraft.

Soviet production principles also differ from those of the West. In the latter, competitive designs are frequently sought in the U.S. (one such example being the current competition for the Advanced Tactical Fighter for the 1990s), which tends to be expensive in terms of design and engineering talent and money.

In Western Europe, the tendency is to make multinational efforts on major new ventures, in a bid to keep the U.S. industry at bay.

Discipline

In the Soviet Union, however, the procurement process is based on rigorous, conservative planning, with the result that risk-taking is minimised, if not eliminated.

The result is some degree of inflexibility, but this discipline, says Nato, helps new equipment programmes to keep to planning schedules. At the same time, there is a marked tendency, especially in Soviet military aircraft, for a long line of progressively updated derivatives to follow the original basic design, often involving significant changes in performance.

A recent Nato study of force comparisons between the Soviet and Warsaw Pact countries and the Western Allies indicated that this centralised acquisition process in the Warsaw Pact tended to result in a substantial degree of standardisation in military aircraft development.

It also suggested that while in some areas, such as forging and extrusion presses, the Soviet Union was ahead of the West, in others it was lagging behind, especially in automated manufacturing technology, including numerically-controlled machine tools and high precision equipment.

The Nato study made it clear that the Soviet Union is well aware of such deficiencies, and is seeking to rectify them speedily. "When it considers it to be to its advantage, the Soviet Union does not hesitate to take advantage of the freedom of Western societies in order to acquire Western technology / equipment and knowledge."

By any standards, however, the Soviet aerospace industry is a powerful force in world aerospace in its own right.

For the rest of the century, doubtless many major new developments will occur that will startle the West, as they have done in the past.

Aerospace 12

Export sales rocket to record levels

Italy

JAMES BUXTON

OF ITALY'S two major aerospace manufacturers only one, Aeritalia, has so far produced its results for 1984. The wholly state-owned company which concentrates on fixed-wing aircraft saw its sales rise by 26 per cent to Lire 1,164bn ($582m) and profits more than trebled to L17bn.

The other company is Agusta, which concentrates mainly on helicopters. Agusta does not propose to reveal until next month bow it performed in 1984. However, in 1983 it lost L166bn on sales of L1,074bn.

As these facts and figures indicate, Aeritalia is the healthier of the two companies. The way Agusta proposes to emerge from its crisis is gradually becoming clear, while there are questions to be resolved about the future of Aeritalia'e workload too.

The Italian aerospace industry has grown fast in the 1980s thanks to a combination of Nato military projects, successful sales in developing countries of belicopters and important subcontracting work for the major U.S. airliner makers. Aerospace exports rose from under L1,000bn werth in 1980 to fore than L2,000bn in 1983.

Aeritalia, which is part of the IRI-Finmeccanica state bolding company, has a fair balance of activities. It builds the Angla-German-Italian Tornado, though unless new orders are acquired this project will soon run down.

With its subsidiary Aermacchi it is developing the AMX light attack and battlefield support aircraft which is to be built in a joint venture with Embraer of Brazil. The companies involved have high hopes for export sales of this relatively uncomplicated aircraft, which is being bought by the Italian and Brazilian air forces.

On the transport aircraft side, Aeritalia is in a joint venture with Aerospatiale for building the ATR 42 turbo-prop commuter aircraft. The aircraft is gradually picking up orders and Aeritalia hopes that the ATR 42 will reach its breakeven point of 350 sales without difficulty.

Aeritalia still hopes for more sales for its G222 military transport aircraft, currently the largest aircraft of entirely Italian design and construction. Aeritalia is not a member of the airbus consortium, preferring instead to develop close links with both Boeing and McDonnell Douglas of the U.S. in making parts for their airliners.

The Italian company builds parts of the McDonnell Douglas MD80, the stretched version of the DC9, and also parts of the DC10. It is a junior partner in Boeing's 767 project using its expertise in design and manufacture of composite materials.

Aeritalia now needs a project to replace the Tornado. It would be a junior partner in the European Fighter Aircraft Project (EFA) but at present this project is shrouded in uncertainty because of differences between the French and their potential partners.

Agusta's situation is rather more complicated. The company which was entirely family-owned until 1973 built up o successful business selling belicopters built under licence from the U.S. manufecturers and was particularly successful in the developing countries, notably Iran.

Two years ago several things began going wrong at once. The developing country markets declined sharply. Some recent acquisitions by the company turned sour and its expansion came to look disorderly and unplanned. A third factor was that the company was badly hit by the rise in the dollar in which it had borrowed very heavily.

Last year there was a management shake-out and a third of the company's workforce was put on semi-permanent lay-off. Recapitalisation was necessary and the stake held by EFIM, another of Italy's state holding companies, went up to almost 91 per cent.

Many of Agusta's problems are associated with its newest product, the A129 Mongoose anti-tank helicopter. Agusta developed the Mongoose on its own without a partner at a cost of L700bn and paid the price when France and West Germany decided to go ahead and develop their own anti-tank helicopter rather than buy or improve upon the Italian one. So far Agusta has sold the Mongoose only to the Italian armed forces.

Now however hopes are high that Agusta will collaborate with Westland of the UK on further developing the Mongoose for sale to the British Army and to other markets. The British and Italian ministries of Defence are working on specifications for a more advanced version of the machine for which both companies would then produce feasibility studies.

This is likely to lead to closer co-operation between the two European helicopter makers, producing an industry that would be the biggest in Europe. Westland and Agusta already co-operate on the EH 101, a large belicopter for naval and civil use which will first fly in 1987. They could also work together on improving the Westland WG 30, a medium-sized transport helicopter.

Co-operating with the British makers would create an Anglo-Italian axis in helicopter manufacture which rival the Franco-German co-operation and also form a pole with which U.S. manufacturers could collaborate.

Suppliers welcome big boost for industry

Spain

TOM BURNS

IN MARCH when King Hussein of Jordan was in Madrid for a state visit his host King Juan Carlos took him to a Spanish air force base and suggested that they put on an impromptu air display.

The two monarchs donned fighter pilot fatigues, oech clambered eboard a C-101-5 advanced jet trainer built by Construcciones Aeronauticas S.A. (Casa) and they then spent more than half an hour cartwbeeling around the skies of Castille as Spanish and Jordanian Chiefs of Staff beld their breath.

It was all in o day's work for the royals, but it was an above-average plug for Spain's eerospace industry. Casa officials are now bopeful that e Jordanian order could be landed but even if they do not win that particular contract they are still pleased as punch about the top level backing the company is starting to ettract.

"Never before have we had the sort of support we are getting now," one company official said. The generally optimistic air that permeates Casa nowadays bas less to do with optimum sales figures, although these ere not discouraging, and is far more closely related to indications that there is now a purposeful official policy behind the country's domestic aerospace industry.

Top-level support is felt in the different areas of Casa's activities. The export sales drive for the existing product line is backed from the royal palace downwards. The government has worked hard and successfully to gain key overhaul contrects that considerably increase the potential of Casa's maintenance division.

The Defence Department in Madrid, meanwhile, has opened new vistas for the company: there is talk of o now tactical aircraft and there is further talk of e move into missiles.

The current buzz phrase among the company's executives is that if Casa did not exist then the Spanish authorities would be forced to invent it. The cliche crope up in conversations that centre on the government'e strategy over high technology.

Casa, according to the argument, is e ready-made vehicle to attract knowhow to Spain and the company is, moreover, called upon to play a key role in what the government hopes will be a reduced dependence on foreign weapons.

In this sense the talk about a new tactical aircraft and the possible manufacture of short-range missiles constitute test cases for the government's commitment to the aerospace industry in Spain or, more exactly, to Casa's future, since the company is the sole Spanish representative of the sector. Casa is 72 per cent owned by the Spanish state holding company Instituto Nacional de Industria (INI), and the Northrop Corporation and West Germany's Messerschmitt-Bolkow-Blohm (MBB) hold respectively 13 and 11 per cent stakes.

Tho new combat aircraft, called the AX, is still several stages eway from reaching the drawing board. Bnt there are growing indication of e political will to replace the Spanish Air Force's F-5 units with a Spanish/Casa-built aircraft of similar tactical characteristics.

The guiding principle is that an initiative of this calibre will harness thet eccumulated knowledge that the aerospace industry in Spain has acquired through past and present associetions with the American giants.

The bonds with the U.S. sector have been reinforced in the past year by the U.S. Air Force's decision to award Casa the maintenance contract of its 100-odd F-15A aircraft in Europe. The overhaul agreement renews an association that goes back 30 years during which Casa maintained principally the U.S. Air Force'e Phantoms. At the height of the Vietnam War Casa'e overhaul division in Getafe, on Madrid'e western outskirts, logged up to 1.3m workbours e year on the F-4.

Since overhaul work was drying up as the Phantoms were phased out, the F-15A contract has given new life to the company'e maintenance division. What makes the ogreement particularly important is the fact that Casa will be working on e new aircraft and ought to be closely involved in the adaptations likely as it enters operational service.

Casa already feels itself to have a front-line seat to monitor the latest in combat aircraft technology thanks to its involvement, albeit a modest one, lu production of the McDonnel Douglas F-18A. The Spanish government has acquired 72 F-18A Hornets and part of the deal is that Casa has been able to put its carbon fibre technology into operation through supplying the aircraft's flaps, stabilisers and fuselage side panels.

Missiles present a whole new fiald for Casa. Again a decision is still pending, but in this case it will be a final green light es a programme for e Spanish portable surface-to-air missile with a 2-3,000 metre range is etreedy well edvanced. The Defence Ministar has announced that Spain will have its own missile by 1989.

This diversification for Casa is the result of beavy spending by the Defence Ministry to supply the armed forces with a new range of guided weapons. The budget allocations were preceded by considerable bartering over the technology transfers that accompanied potential acquisitions.

The Defence Ministry finally obtained the terms if sought from France and purchased 500 Roland missiles from the French - West German Euromissile consortium last year in preference to the UK's Rapier and to the U.S. Chaparral which were also shortlisted.

Part of the deal with Euromissile was that in eddition to the missiles it was purchasing, Spain would build up to 6,000 further Roland warheads for export.

As far as Casa'e existing product lines are concerned there bave been no dramatic breakthroughs but there is e confident feeling that the company has overcome the delayed effects of the 1982-83 dip in the world aircraft market.

The C-212 Aviocar, the successful short take-off and landing aircraft, continues to attract varied customers, the latest including a U.S. commuter line which has ordered two units, tho Angolan government which has ordered eight specifying that they be adaptable for military transport purposes, and the King of Tonge who has ordered one for his personal use.

Casa hopes for e major contract to supply 50 or so units of the CN-235 to Turkey. This aircraft, a bigger, faster and sleeker version of the Aviocar, was rolled out in 1983 and it is built as a joint venture between Casa and the Indonesian areospace company P. T. Nurtanio.

Casa officials say that 111 aircraft have been sold, mostly by the Indonesian sales operation, and that there are a further 23 options.

The Spanish company's third aircraft is the C-101 and its updated C-101-5 version.

Outside its own domestic lines Casa continues to keep a toehold in the European aerospace sector through maintaining its 5.2 per cent presence in the A-320 Airbus programme. The Spanish government is also backing the European fighter aircraft project.

A strong emphasis on joint ventures

Sweden

DAVID BROWN

"INTERNATIONAL co-operation is vitally important for small countries which intend to maintain their own aircraft industries," according to Mr Tore Gullstrand, chief of Saab-Scania's aerospace division.

This is particularly true for Sweden, which leans almost entirely on two major aerospace projects: one civil and one military.

Saab-Scania is moving into the regional airliner market with its new SF 340 Saab-Fairchild twin turboprop now being jointly produced with Fairchild Industries of the U.S. Saab hopes the project will prove to be an effective means of reducing its heavy dependence on military contracts.

Fairchild is building the wings and fin of the 35-seat aircraft in the U.S., while Saab is building the fuselage and carrying out final assembly. Two General Electric CT7 engines power the aircraft, which has a range of 1500 km and a speed of 500 km hour.

Following a four-year development effort and an SKr 1bn ($111m) investment, the SF 340 has now gone into production in Sweden. As competition in the regional airline market increases — De Havilland'a Dash 8 and Embraer's Brasilia 120 offer similar packages—Saab reckons that to break even, it will have to sell 200 aircraft, corresponding to 10 per cent of the estimated world market.

The group has delivered 17 SF-340s so far and expects to build e further 35 in 1985—but total orders remain well below the required level. Moreover, the project has been dogged by delivery delays and technical hitches which resulted in several groundings last year.

This took its toll on profits. Operating income in Saab's flying division more than halved to SKr 70m last year (from the SKr 157m achieved in 1983). This was due to the heavier-than-expected start-up costs for production and marketing and came in spite of the strong 33 per cent rise in sales to SKr 1.92bn, most of which was generated by military contracts.

Sweden's largest continuing project at the moment is the development and production of its next generation combat aircraft, the JAS 39, in which Saab is also playing a leading part.

The SKr 36.2bn project calls for production of 140 multi-purpose combat aircraft together with associated weapons to go into service in the 1990s. The initial SKr 10bn contract for 30 jets has already been ewarded to an industry consortium made up of Saab, Volvo and the LM Ericsson electronics group.

Saab is responsible for 60 per cent of the work including airframe construction and systems integration. Volvo and General Electric are co-operating in the production of a single jet engine based on the F-404 and Ericsson is producing the radar, sensor and target equisition systems as well as the cockpit display.

The major foreign subcontractors include GE, Lear Siegler (electrical flight systems) and British Aerospace (development of an all-composite wing).

The high proportion of increasingly expensive dollar denominated foreign contracting has taken a heavy toll on the project—forcing an Skr 10bn gap between the allocation and actual production cost and forcing major cutbacks in both the number of aircraft to be produced and the weaponry with which they will be equipped.

Like its predecessors—the Viggen and Draken aircraft—the JAS 39 Gripen's role includes attack, intercept and reconnaisance capability.

In a separate development, Saab recently won an order from the Austrian government to provide 24 refurbished Draken H jets worth Sch 2bn to the Austrian Air Force. The order was won against tight competition from British Aerospace, with its Lightning fighter. Although the UK package was said to be both cheaper and preferential to the military, Sweden's neutral status is thought to have tipped the balance.

Bold bid to secure promising market

Netherlands

LAURA RAUN

FOKKER, Holland's major aerospace company, is boldly staking its future on the F-50 and F-100 aircraft—the modernised versions of its highly-successful F-27 twin turbo-prop and the durable F-28 twin fan-jet.

The new aircraft are a bid by Fokker to secure a promising market share in the growing short- and medium-haul sector amid increasingly fierce competition in the industry. The Dutch company is banking on these aircraft having highly-automated control decks, low maintenance costs and passenger comfort to ensure sales in a shrinking market.

The shakeout in the airline industry in recent years has rendered carriers more careful than ever about operating costs, particularly in deregulated markets such as the U.S. "Free sky" policies are expected to spread in Europe as well, albeit slowly, thus putting a premium on efficient yet comfortable aircraft and renewed emphasis on financing arrangements.

Fokker believes that by updating the technology in its already-proven F-27 Friendship and F-28 Fellowship instead of designing wholly new craft, it can offer the F-50 and F-100 as state-of-the-art aircraft at reasonable prices.

The 50-seat F-50 and 100-seat F-100, unveiled in November 1983, still represent a major financial risk. Development costs are expected to amount to about Fl 1.2bn ($342m) and the F-27 airliner will be phased out next year. As aircraft manufacturing is Fokker's bread and butter, the F-50 and F-100 must sell to keep the Schiphol-based company healthy.

Frans Swarttouw, the dynamic president of Fokker, recently forecast that 30-40 orders and a similar number of options for the F-50 would be in hand by the end of this year. That assumes a rapid escalation from the current 21 orders and six options but would put the company on a sound cost-recovery schedule if they materialise. Fokker has said it needed to sell between 150 and 250 of each new model to break even.

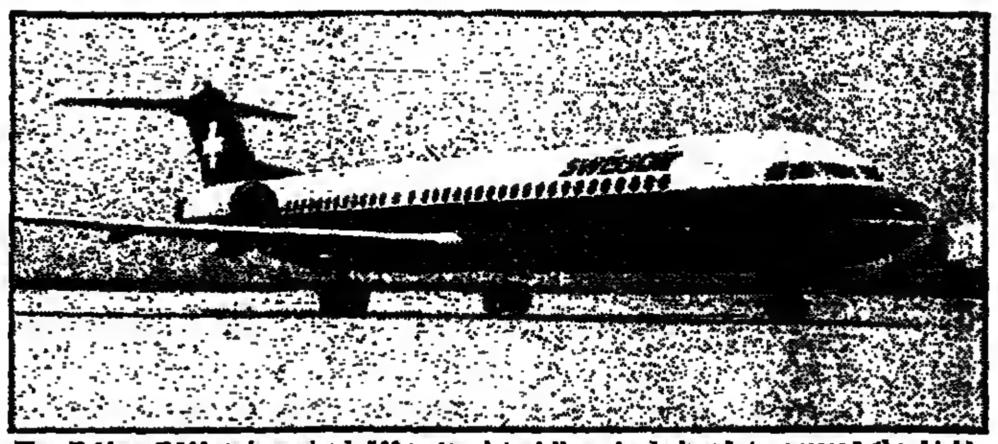
Mr Swarttouw, head of the 66-year-old company, also forecast another 30-40 orders and equivalent number of options for the F-100. Such a portfolio would represent even more buoyant business for the twin-jet, which currently has eight orders and six options.

A big hope is that the kind of airline companies ordering the new Fokker airliners will set a trend in the industry, which is witnessing growth in short- and medium-haul routes. Swissair, the only customer for the F-100, plus Lufthansa's DLT subsidiary and Australia's Ansett airlines are respected names in the industry. Business from these airlines could give Fokker the credibility it needs to compete against heavyweights such as British Aerospace, McDonnell Douglas and Boeing.

Negotiations

Fokker hopes to announce soon an order from KLM Royal Dutch airlines for 10 F-100s plus an option for 10 more and possibly a contract from SAS for F-100s as well. The Dutch company claims to be number one on SAS's short list, ahead of McDonnell Douglas with its MD-87, Boeing with its 737-Lite and British Aerospace with its 146. Negotiations with U.S. Air offer about a 50-50 chance of an order for the F-100, according to Fokker.

The Dutch aerospace company is aiming for a smooth transition from its older into its newer aircraft models. Civil production of the F27 will stop next year except for customers with "good names," Mr Swarttouw said recently—although maritime and reconnaissance versions will continue on demand—the expectation is that marine and border-control versions of the F50 soon will supplant the F27.



The Fokker F-100 twin-engined 100-seater jet airliner is designed to succeed the highly-successful F-28. Swissair is the first buyer of this aircraft, which will use the Rolls-Royce Tay jet engine, now under development

The spare-parts market for the F27, of which more than 762 have been sold since its launch in 1955, will continue for another decade. No decision has yet been made on when to halt production of the F28, of which more than 200 have been sold.

Production of the Pratt and Whitney-powered F-50, for which deliveries will begin in the second half of next year, is planned at 24 craft a year. Output of the Rolls-Royce-driven F-100, for which deliveries will begin in the first half of 1987, is seen in three possibilities of 24 or 36 or more annually.

While much of Fokker's future hangs on the two new aircraft, the financial risk is being eased by state aid. The Dutch Government and the Netherlands agency for aerospace programmes together provided Fl 264m in subsidies and guaranteed loans to help finance the Fl 1.2bn development costs. The funds must be repaid only when aircraft are sold and delivered.

The company, which first rose to prominence with its fighter aircraft, also is launching a one-for-three rights issue that is expected to generate around Fl 60m.

That follows a one-for-four rights issue last year that yielded Fl 15m.

In military orders, production of F-16 components will be accelerated this year due to an influx of orders although final assembly of the General Dynamics-designed F-16 will halt in 1991. Fokker has said that in the future it will intensify its efforts to capture orders for high-technology projects in the military area.

The closer co-operation among European governments "offers a promising outlook," the company wrote in its 1984 annual report but more recently noted the painfully slow pace of negotiations over the European Fighter Aircraft (EFA). More concrete is the feasibility study on the Nato helicopter NH-90, in which Fokker is participating.

While Fokker comprises the bulk of the aerospace industry, other small companies dot the landscape. The most well known is Hollandse Signaal Apparaten (HSA), a 99 per cent owned subsidiary of Philips, which is engaged in electronics for military weapons and telecommunications and air-traffic control systems.

The Hengelo-based company, which employs 5,000, is working on the Goalkeeper anti-missile system for ships, which has been ordered by the Dutch and UK navies. A staple of HSA has been the Flycatcher low-level air-defence system, of which the most recent sale was to the U.S. Air Force.

The home of small but specialised sectors

Switzerland

JOHN WICKS

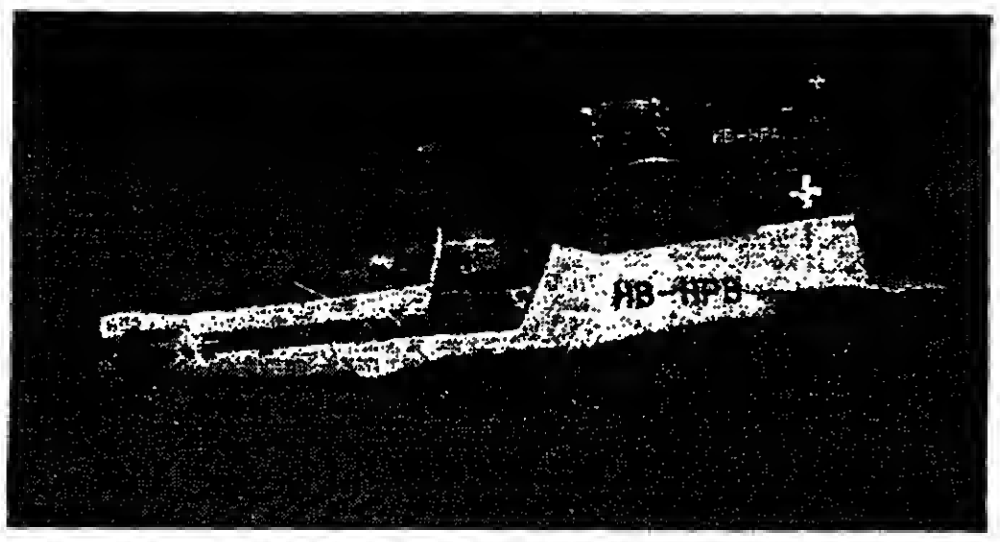
IN THE aerospace business, Switzerland is better known as an importer than as a manufacturer. The country has one of the highest per-capita defence budgets in the world, making the Swiss Air Force an important client for fighter and trainer aircraft.

It is also the home of Swissair as a major scheduled airline, as well as the mighty-atom regional carrier Crossair and the charter companies Balair and CTA.

The confederation is also the home of a small but specialised aircraft industry, however. Exports alone have been rising in the past few years to reach a 1983 level of almost SwFr 300m, quite apart from the substantial amount of work for the domestic market. The Swiss Association of Machinery Manufacturers (VSM) sees improved chances for its members' aircraft on international markets in the long term.

One Swiss manufacturer has been very much in the headlines in the past months. Pilatus Flugzeugwerke, the Stans-based aircraft subsidiary of the Oerlikon-Bührle group, had been considered a likely recipient of the Royal Air Force order for trainer aircraft.

A total of 130 turbo-prop planes, with an option for a further fifteen, was widely expected to favour Pilatus' PC-9 model. This would have been delivered for assembly in the UK by British Aerospace.



The Pilatus PC-9 new basic military trainer, although unsuccessful in the recent RAF contest to find a new trainer (the victor being the Brazilian Embraer Tucano with Short Brothers), is continuing in production for sale to world markets.

This means that despite the Brazilian Tucano's success in winning the RAF order, that aircraft will still face severe competition in world military trainer aircraft markets, where demand is strong but in which the number of different aircraft bidding for available orders continues to expand.

Last month, the British Government decided to buy the Brazilian trainer Tucano instead. BAe remains very keen on the PC-9, however; it will continue to co-operate with Pilatus and hopes to sell the aircraft on the world market.

At the same time, there has been a jaundiced reaction in Switzerland. Berne is now reviewing its original intention to buy Land-Rovers for the Army and has ruled there should be a re-evaluation of the British vehicle and an Austrian competitor.

Also, although there is no official connection, Lord Trefgarne told the House of Lords last year that the choice of the PC-9 would "doubtless" have improved the chances of Britain's selling the Hawk jet trainer to the Swiss Air Force.

Pilatus, which in 1979 bought up Britten-Norman on the Isle of Wight in the UK, has more aircraft on the stocks than just the PC-9, though. The PC-7 trainer has sold very well since deliveries started in 1979 and recently benefited from a Government decision that it did not fall under the restrictive regulations laid down in Switzerland for the export of "military equipment."

Other output from the company, which together with the Bembridge subsidiary booked 1983 sales of SwFr 266.1m, includes the short take-off PC-6 Porter, wing panels for the A-310 Airbus and castings for the Northrup U.S. Navy aircraft Hornet.

The Swiss Government, which rarely participates in manufacturing, is also in the aerospace business. The Swiss Federal Aircraft Factory in Emmen, near Lucerne, is operated as an independent company with the aim of "placing expertise in the fields of aviation and guided missiles at the service of the Swiss armed forces."

This means the actual construction of combat aircraft, helicopters and missile systems under licence, as well as providing knowhow and maintenance for units already in service.

Thus, when the Swiss Government ordered the American Tiger fighter in the early 1970s as a replacement for Hunters in the national Air Force, this contract was based on an offset and assembly agreement. As well as leading to valuable compensatory orders from Swiss industry by the U.S., this means years of work at Emmen. The final 110th Tiger was handed over by the Federal establishment this March.

Should BAe obtain the Swiss order for Hawks, these could also be expected to be assembled at Emmen, probably in connection with an offset agreement similar to that arranged for the purchase of the British Rapier ground-to-air missile. Indeed, the British group is understood to be prepared to discuss the sale of Anglo-Swiss Hawk trainers in third countries.

As well as assembling aircraft and missiles for domestic defence purposes, the Federal Aircraft Factory has also contributed to European aerospace ventures, developing and manufacturing such items as refrigeration installations for the Spacelab or payload shrouds for the Ariane. The Oerlikon-Bührle subsidiary Contraves, whose arms systems include the anti-aircraft fire-control unit Skyguard, has also contributed to the Ariane project.

Switzerland's third aircraft-builder is the almost 60-year-old Flug-und Fahrzeugwerke in Altenrhein, formed in 1926 as a Swiss arm of the nearby Friedrichshafen headquarters of Dornier over the border in Germany.

FFA, whose first aircraft was the Delphin flying boat of the late 1920s, made world news shortly afterwards with the giant flying-boat Do X for 60 passengers. In the 1950s, after having left the Dornier group, it came up with Switzerland's first ground-attack fighter, the P-1604, whose civilian version became the better-known Lear Jet.

Today, the company is a diversified industrial company, making everything from suburban trains and milk-tanker lorries to tank parts and spray-dyeing installations. It is, however, still very much an aerospace company.

Apart from its Bravo passenger and training plane, it operates in the field of detail-part manufacturing, aircraft assembly, the bonding of aircraft furnishings and specialised surface-treatment, machining and quality-assurance services for aerospace.

Suppliers seek to widen scope of product areas

Belgium

PAUL CHEESERIGHT

THE BELGIAN authorities, public and corporate alike, continue to search for the path which will reduce the reliance of local industry on offset arrangements, for making parts of aircraft provided by foreign companies meeting defence contracts.

Partly this is to escape the void which can open up after participation in a defence contract winds down.

Civil aviation work can provide the answer to this. Hence Fabrique Nationale Herstale, best known as a defence contractor, is seeking finance to take part in a new engine development with Pratt and Whitney of the U.S.

This would complement work on another engine, the CFM 56-4, and is a counterpart to the participation of other Belgian companies like Sonaca and Watteeuw in the European Airbus as sub-contractors to British Aerospace.

This sort of activity emphasises the longstanding role of the Belgian industry—that largely of a parts supplier to the major concerns in other countries which are design and assemble aircraft.

Latterly, however, there has been an attempt to widen the scope of the industry, notably in the sector of light aircraft. Hopes in this field have been dashed before, but the latest project, promoted by Promavia on the basis of a design by an Italian engineer, is a new training aircraft called the Squalus.

Squalus would be powered by a Garrett engine from the U.S. and could have both military and civil uses. The southern regional government of Wallonia and the executive of the Brussels region are keen enough on the project to consider financial support, but it seems unlikely that many sales could be made abroad, failing a purchase by the Belgian Air Force. It is not clear whether that will occur.

Promavia has apparently been having talks with two of the companies for long active in aviation, Sabca and Sonaca. They are already in the light aircraft field. Sabca is working with Rutan of California on the development of a new spraying aircraft for the agricultural industry. Sonaca is manufacturing aircraft under licence for American Aerolights.

But the plans of another American company, Foxjet International, to manufacture light aircraft at a new plant in the province of Limbourg, faded because work to build the plant at the beginning of this year did not proceed.

Despite all these developments, it seems clear that the main revenue in the immediate future will come from the industry's involvement in defence contracts, and the spin-off from them in the shape of work emanating from the offset arrangements.

The new phase of manufacture on the uprchase by the Belgian Government purchase of 44 F-16 aircraft starts shortly. This is Belgium's second F-16 contract and it provides for 58 per cent of the contract value to be offset directly in Wallonia, the French-speaking south of Belgium and 22 per cent indirectly in the Dtuch-speaking northern region of Flanders.

Wallonia has been the traditional home of the Belgian industry with companies such as Fabrique Nationale, Sonaca and Sabca, but in recent years there has been increasing interest in Flanders. Given the regional rivalries and political complexities of Belgium, this has prompted a Flemish drive for a share of the offset.

The indirect offset for Flanders has ben the subject of a Belgian Government contract with General Dynamics which carries a price tag of BFrs 10bn ($0000). In April, Mr Mark Eyskens, Minister for Economic Affairs, specified that not only would that figure be reached in the form of direct orders and technology transfers, but that the contracts involved technology of a level comparable to that of the F-16 itself. They were not for products like jam.

This has been especially important for Belgium, because it has been anxious to use offset contracts not only as a means of providing work and revenue for companies but as a means of obtaining a technological infusion.

The sort of activity which has been involved so far has included the transfer of composite materials technology from Raychem in the U.S. to its subsidiary in Belgium with contract for the manufacture of items which otherwise would have been done in the U.S.

But the major concern in the industry now that the F-16 programme is settled is how the Belgian Government will deal with a contract for 46 helicopters, expected to be granted sometime this year.

The international giants of the helicopter industry have been busy for months creating their links with Belgian companies on both sides if the commercial divide. They have been promising not only offset but also research contracts to Belgian industry, as in the case of Westland of the UK, or brandishing the possibility on new plants to make both the Belgian helicopters and others for sale elsewhere — as in the case of Sikorsyk of the U.S.

Other contenders are Aerospatiale of France, MBB of West Germany, and Agusta of Italy. But the Belgian Government, working within the confines of a tight defence budget, is keeping the companies guessing.

However, the regional proportions of the future offset arrangements have long been specified: 54-56 per cent for Flanders to help make up for the fact that most offset in the past has gone to Wallonia, 34-36 per cent for Wallonia itself and 9-11 per cent for the Brussels region.

Continued lag in performance

Japan

ROBERT COTTRELL

JAPAN'S AIRCRAFT manufacturers represent one of the country's few underperforming industrial sectors. While Japan's carmakers and electronics manufacturers, for instance, combine mass-production with high technology to dominate world export markets, Japanese production in 1982 accounted for only about 3 per cent of world aircraft engines, and 1 per cent of airframes.

The main reason for Japan's laggardly performance is the relative weakness of its military establishment. National defence spending is limited by political convention to just 1 per cent of gross national product, though that level seems likely to be breached this year.

Constitutionally, Japan is supposed to maintain only defensive, not offensive, forces. The constitution was adopted by Japan after defeat in a war which not only smashed many of its industrial facilities, but saw official dismemberment of the industrial combines which had proved such efficient manufacturers of fighters and other military hardware.

Japanese aircraft makers got back into business postwar by repairing aircraft for the U.S. occupation forces. After the occupation, the major military customer became the Self-Defence Forces set np in 1954.

Eight years later, six large Japanese engineering companies combined to produce a twin turbo-prop engined commercial aircraft, the YS11, in 1962. The YS11 group comprised Mitsubishi Heavy Industries; Kawasaki Heavy Industries; Fuji Heavy Industries; Meiwa Industries; Japan Aircraft Manufacturing and Showa Aircraft Industry.

The YS11 revitalised Japan's civil aviation manufacturing capacity. In the next decade, Mitsubishi Heavy Industries led development and production of the T2 fighter aircraft, which first flew in 1971. The T2's improved successor, the F1, was introduced in 1977, and a still more manoeuvrable version, the T2CCV, in Japan. in 1983.

Japan's Ministry of International Trade and Industry, which has guided in outline and detail the country's post-war industrial growth, has designated aircraft engineering asa strategic industry in which it wants to see accelerated growth.

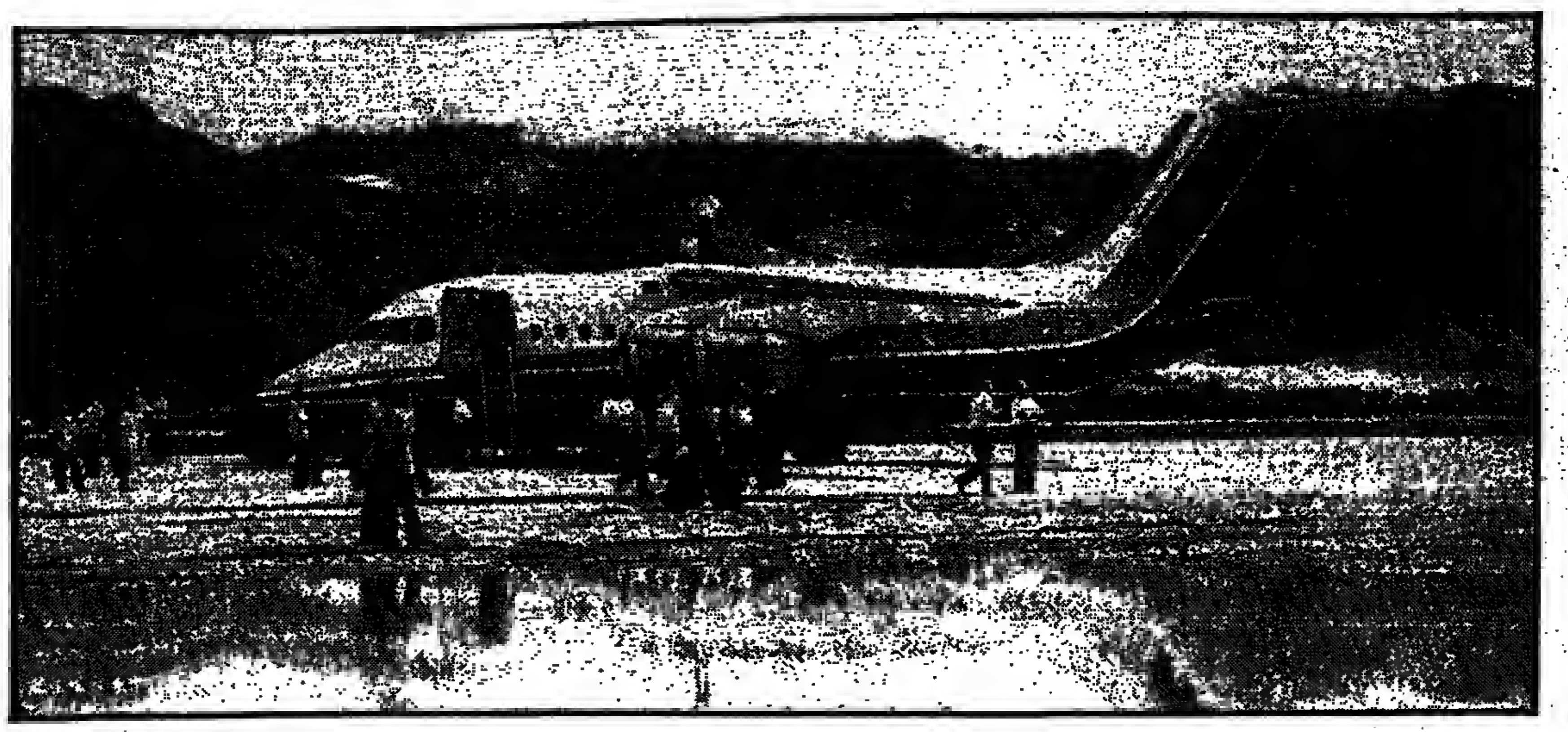
Officials do not see Japan giving birth to an integrated airline manufacturer which could challenge the likes of Boeing or McDonnell Douglas, the U.S. giants. They do, however, believe that Japanese engineering companies can increase their contributions to international aircraft projects, and make particular technological innovations.

Japanese companies already manufacture part of the fuselage for Boeing's 767. A consortium of three engineering firms, Mitsubishi Heavy Industries, Kawasaki Heavy Industries and Fuji Heavy Industries, now hopes to take a one-quarter share of the development and manufacture of a possible new-generation 150-seater Boeing, code-named the YXX.

Memoranda on the project were exchanged in March last year. The YXX would involve a further 20 Japanese companies as major suppliers of parts for the aircraft, and would see the Japanese taking marketing as well as a manufacturing role.

Among the engineering breakthroughs for which Japanese companies are working, many hopes hang on the commercial and technical viability of the "propfan"— high-speed propeller-engine. Aerospace engineers in the U.S. have been rediscovering the virtues of the fuel-efficient propfan in research projects dating back 10 years.

Japanese research dates back to 1980. Japan's big engineering companies are waiting for an industry-government consensus to emerge on the propfan's commercial potential before taking the project out of the laboratory. and into production.



British Aerospace recently won a major breakthrough in China with an order for ten of its Type 146 regional four-engined jet airliners, worth about $150m.

The order followed months of negotiations, which in turn followed a major sales demonstration tour by the 146 throughout China and the Far East last year. The aircraft is pictured in China on that tour.

China has also recently placed another major breakthrough order, for three of the bigger European Airbus A-310 airliners with an option on two more, and has also bought McDonnell Douglas and Boeing jets, indicating its desire to expand its fleet across the range-payload spectrum.

Exhibition welcomes foreign suppliers

China

MICHAEL DONNE

CHINA, ONE of the biggest countries in the world, is now seeking to expand its aviatinn sector, and is welcoming approaches from foreign civil aircraft and engine manufacturers. Suppliers of all kinds of aviation equipment, are welcome too, to provide complete airports through to air traffic control equipment and down to baggage loading trolleys.

The full extent of China's interest, and its needs, was shown last December at the China Aviation Expo '84 in Beijing, the first exhibition of its kind held in the country.

It was designed primarily to enable foreign suppliers to show the Chinese what they had to offer, but at the same time gave a clear indication of the depth of China's aviation requirements. The exhibition was undeniably a great success, and several major manufacturers in the U.S., the UK and West Europe have since won big orders.

Among the major contracts announced recently by the Chinese authorities is the order for the British Aerospace BAC 146 four-engined regional jet airliners, worth about $150m This was preceded by an order from the Civil Aviation Administration of China (which controls all civil aviation activities in the country) for three wide-bodied A-310 Airbuses from the European Airbus Industrie consortium, in which British Aerospace has a 20 per cent stake.

The Airbus fleet, worth about $150m, is to be delivered between June, this year, and May, 1988. It will be operated from Shanghai on internal regional routes, replacing smaller, narrow-bodied aircraft of less advanced technology.

Another major recent order was the CAAC decision to buy eight of the Short Brothers (Belfast) Type 360 short-range twin turbo-prop, 36-seat regional airliners, with the prospect of many more being bought in the years ahead. China is believed to have a massive demand for this type of aircraft, especially in view of its rugged terrain and large number of difficult airfields.

Rolls-Royce has recently won a £15m order from China for Spey gas-turbine industrial engines, developed from the Spey engine (which has been manufactured under licence in China for many years) for electricity generating station duties in the north-west of the country.

McDonnell Douglas, the U.S. aircraft manufacturer, only last month signed a contract with China for the purchase by the CAAC of 26 MD-80 twin-engined jet airliners, of which 25 will be assembled in Shanghai, at the factory of the Shanghai Aviation Industrial Corporation, with options on another 14 jets.

The first MD-80 will be built and fully assembled in Long Beach, California, and flown to China later this year. The other 25 MD-80s will be partially built in Long Beach, and shipped to China for completion.

The aircraft will go into service on Chinese airlines' domestic and international routes beginning in 1987. The Shanghai Administration Region of the CAAC has operated two MD-80s since December, 1983.

Studies

The agreement between McDonnell Douglas and the CAAC will result in the establishment of a joint task force to carry out engineering and market feasibility studies, aimed at the co-operative development of nther new airliners for the future, while also providing for continuing efforts to expand the Chinese aviation manufacturing export trade.

The agreement envisages establishment of a new MD-80 final assembly line at the 10,000-worker factories on the outskirts of Shanghai, and the training of Chinese production managers and workers for their jobs. Large-scale exchanges of people between China and the U.S. are planned to accomplish the task.

The McDonnell Douglas deal illustrates the scale of the Chinese requirement for aircraft and equipment. The deal is believed to be worth about $400m, and shows the extent to which the Chinese are prepared to buy when they are convinced that the product is right.

It took McDonnell Douglas several years of negotiations, including a preliminary sale of two MD-80s some two years ago (and a long period of Chinese manufacture of MD-80 landing gear doors) before the latest deal was clinched.

Other manufacturers who have sold to that country in the past, including Boeing of the U.S. (with 747s and 737s) and the UK's Hawker Siddeley Aviation (which before it became part of British Aerospace sold Trident airliners to China) all say the same — that negotiations are long and meticulous, with the Chinese acutely price conscious.

The precise extent of China's aviation requirements is not known, and few statistics are available to indicate the scale of its civil aviation problems. But it is estimated that several hundred aircraft of all kinds, from wide-bodied short-to-medium range transports such as Airbuses, through to small regional feeder-liners, are likely to be needed.

At the same time, the country will need to modernise many of its existing airports, and even build new ones (a new airport near Canton, just across the border from Hong Kong, is planned), and those who have flown internally in China know that the ground infrastructure — radars, instrument landing systems, airport buildings, and so on — needs radically to be improved, especially in remoter parts of the country.

The emphasis, however, will be on buying technology from the aerospace and associated industries of the West, and using it to build up indigenous Chinese expertise, including eventual manufacture under licence. As the McDonnel Douglas deal shows, China's aerospace industry is ready to take on such tasks as assembly of a modern airliner like the MD-80 (it already manufactures parts for the MD-80 and other Western airliners, such as undercarriage doors for the British Aerospace 146 four-engined jet regional airliner).

China's own state aerospace industry is comparatively small, and for much of the post-war period has been based on the production under licence of originally Soviet-designed types of aircraft, both civil and military, especially from the Shenyang and Harbin factories specialising in military types based on Soviet Mig and Ilyushin fighters and bombers.

There have been signs of a strong desire to break with this tradition, however, and establish Chinese-orientated design capabilities, albeit influenced by Western aerospace designs.

One major example of this has been the Shanghai Yunshuji Y-10 transport aircraft, a four-engined jet airliner, bearin ga sriking similarity to the Boeing 707 jet airliners.

The engineering and design capability thus undeniably exists. What has held the Chinese industry back has been not only the past commitment to Soviet-originating designs, but also lack of adequate funding for procurement from the West. This situation now seems to be changing.

Ambition and confidence in industry's future

Brazil

ANN CHARTERS and ANDREW WHITLEY

AMBITION AND potential are two ingredients the expanding Brazilian aerospace industry does not lack. Embraer, the state-run aircraft manufacturer, is doodling with the idea of a supersonic fighter while Avibras, the other main force in the industry, is already talking about a sophisticated communications satellite.

From a technical standpoint, both companies can feel justified in their confidence. New developments in progress at Embraer include a subsonic interceptor/groun dattack aircraft being built in conjunction with Aermacchi and Aeritalia. Avibras, meanwhile, is forging ahead with its export-proven military rocket systems and long-range space rockets.

Together these two companies, based in Sao Jose dos Campos, employ more than two-thirds of the Brazilian industry's estimated 15,000-strong labour force. More tellingly, last year they earned $310m out of at total sales revenua unlikely to have exceeded $400m.

Both have grown up over tha past decade into international standard companies, able to compete on equal terms in developing country markets with any Western or Soviet-bloc rival. Reliability, ease of operation, low cost and an absence of political strings were—and still are—the Brazilians' selling points abroad.

Persuade

Embraer's recent success in persuading the Royal Air Force to take the Brazilian-designed Tucano as its new basic trainer (to be built under licence by Shorts of Belfast) however opened up the prospect of further sales to the most demanding markets in the world.

Nurtured by the military-run air ministry, concerned to give Brazil technological independence of the major world powers, the industry has in recent years become a valuable hard currency earner for the country. Morethan two-thirds of Embraer and Avibras' combined billings in 1984 came from exports and Embraer, for one, hopes that with the arrival of its new civilian aircraft, this proportion will increase in thecoming years.

The development by Embraer of a sturdy, twin-engined turboprop passenger aircraft, the Bandeirante, found a market niche at the right moment in the mid 1970s, when fuel economy was becoming a major concern worldwide. Sales are now dropping off, but this first model proved to be an invaluable launching pad.

In its place Embraer is pushing an advanced version, a 30-seat passenger aircraft known as the Brasilia, and is talking with Shorts abont the joint development of a larger, 45-seat model. Much will depend on how sales, preseotly rather sluggish, go on the Brasilia.

For its part Avibras, which began life 25 years ago with research into space rockets and propellants, hit a goldmine with the Gulf War. Since 1981 hundreds of its Astros—an acronym for artillery separation rocket systems—have been sold to Iraq.

Problems have inevitably arisen for the industry as it expanded. Development finance has been in short supply in recent years. And the price of its no-strings policy in the military sphere has been a cramping unavailability of much of the most up-to-date Western technology.

Some of these restrictions are now eroding away. Interested customers in the Middle East have put up advance payments as development finance. Joint ventures on military aircraft and local assembly agreements, in Belfast and Cairo, are beginning to spread.

But the central issue of Brazil's refusal to accept the usual Western limitations on third party sales has yet to be faced head on, and remains a long-term impediment to the growth of the industry. As an alternative, co-operation with the Soviet Union is, politically, out of the question.

Because of these disagreements, a potentially important military industries co-operation pact with the U.S., signed after President Ronald Reagan's November 1982 visit, remains a dead letter. On the other hand, under competitive pressure for access to a dynamic and, in the face of the recent severe domestic recession, resilient industrial sector in Brazil, West European suppliers are helping make up some of the lost ground.

Avibras Industria Aerospacial, a private company whose shareholders are all either directors or employees, points instead to the way it has successfully designed and manufactured its own military rocket systems as a harbinger of what Brazilian technology can accomplish.

Sr Pedro Cial, its commercial director, argues that Avibras' Astros, with their nine to 60-kilometre range, are the only complete rocket system in their class for land forces. "This (range) is 30 kilometres more than competitors' products offer," he claims—a boast to which the population of Iran's border towns can bear witness.

Using either conventional artillery methods with forward observers, or else a radar and computer-controlled firing director unit, the system can fire three different types of rocket. The technology was nearly all home grown, at Sao Jose dos Campos, with only the fire direction unit for low-level air denfence coming from a foreign supplier—a Swiss company.

Meanwhile, Brazil's civilian space programme is proceeding at a slower pace, handicapped by a severe cutback in all state spending.

Last February saw a major landmark when the Ariane rocket put the country's first domestic satellite—made by Spar of Canada under licence from Hughes—into orbit from nearby French Guiana. Brazilian manufacturers, primarily Avibras, were responsible for most of its associated earth stations and other ground equipment.

The next stage, scheduled for 1988, calls for the launch of a simple, Brazilian-made satellite intended primarily for topography research. And provided government funds are made available. The final goal is to use the Sonda solid-fuel rockets developed by Avibras to put a fully-fledged communications satellite into space from Brazil sometime early in the next decade.

Civil aviation funds curtailed

Argentina

DAVID WELNA

ARGENTINA'S STATE aircraft industry is about to unveil its latest model, a training aircraft, while production continues of the now-famous Pucara attack aircraft in a generally depressed domestic aircraft market.

The IA-63, which has been christened "the Pampa," is the new Argentine basic and advanced-level trainer. Three prototypes have already been successfully tested, according to a spokesman for Tecnologia Aeroespacial which markets the aircraft produced by the State-owned Fabrica Militar de Aviones (FMA).

FMA plans to display the Pampa at the Paris Air Show, where they hope to take in tha first orders for the trainer. They estimate it will be at least another year and a half before the aircraft reaches series production.

In the meantime, FMA continues to put together about one new Pucara fighter (also known as the IA-58) per month, which is half the normal production rate for the $4.2m aircraft.

FMA officials will not to confirm reports that Kuwait recently signed a contract to buy 40 Pucaras, a company spokesman did say, however, that "between 20 and 40" have been ordered by customers whom he would not identify.

The spokesman said both Iraq and Iran have expressed great interest in the Pucara. Uruguay, which bought six of the fighters two years ago, had left open the option to acquire more, while both Bolivia and Venezuela were other potential buyers.

In addition to the Pucara and the Pampa, which are both fully designed domestically, the FMA also has a light transport on the drawing boards, although its production has not yet received final approval.

The Argentine government has severely limited funds available to all state industries, and aerospace experts doubt that fresh funding will be made available to the FMA for additional research and development.

Civil aviation in Argentina has also been severely affected by the country's economic woes. A spokesman for the Aeronautic Industry Council said that while during better times there might be a market here for between 130 and 150 civilian aircraft sales per year, now not even used aircraft are being sold, due to drastic cutbacks in their use by businesses.

While Cessna pulled out of local prodution years ago, Piper still continues to assemble aircraft in the province of Cordoba.

Aeroboero, owned by the Argentine Boero family, also continues to produce a light aircraft used domestically for training and cropdusting, though production figures are not available.

Uncertainties as corner is turned

Canada

ROBERT GIBBENS

CANADA'S aerospace industry is finally beginning to turn the corner after the severe turbulence of the 1982-83 recession. But uncertainties over the future of tha two airframe builders are not likely to be resolved in 1985.

Most of the defence-related compooent and service companies came through tha recession relatively unscathed as did the avionics sector. While the principal engine builder, Pratt and Whitney Canada, saw its small turbine engine sales dip sharply, recovery is now well advanced on the strength of a more diversified world general aviation market. The company has also stepped up its research and development effort significantly.

The major areas were Canadair in Montreal and De Havilland Aircraft of Canada in Toronto. Both companies had products coming to market as the recession h it. Technical problems with the engines of the Canadair Challenger 600 did not help, nor did the collapse in world oil prices which hit Middle East sales.

The restructuring of Canadair and DHC was carried out by the Trudeau Government early in 1984 and now the Mulroney Government is fully committed to privatising both companies in the next year or two. The issue could well generate as much political heat as the Avro Arrow debacle of the late 1950s if the Government allows control to leave Canada.

The Liberals, on the ground that both companies were a vital part of the country's technological and industrial base, put nearly $2bn directly or indirectly into Canadair and DHC.

In effect, the development costs of the Challenger 600 and 601 with large engines were lifted off Canadair's back and most of those for the Dash-7 and Dash-8 Stol aircraft from DHC. The same Government has bought Canadair from General Dynamics for $46.6m in 1976 to save it from possible closure and DHC for $40.5m in 1974 from the UK parent.

Major changes in management and marketing policies have been completed recently at both companies while Canadair has begun to break even and DHC is picking up steam. Further sums may have to be injected into both as they try to improve product performance and broaden the market for their basic aircraft in highly-competitive world conditions.

Around year-end, Canadair sold seven Challenger 601s to West Germany and the federal government agreed to buy the remaining 600s from inventory for training purposes. DHC recently has pulled in more than 30 orders for its Stol aircraft.

Canadair is trying to expand its subcontracting work for the major U.S. aircraft companies and develop its surveillance drone business. DHC's backlog for Stol aircraft is now more than 100 with most of the orders and options from U.S. commuter lines and overseas operators.

Federal industrial expansion minister Sinclair Stevens has put Paul Marshall, former head of a major company in the Brascan group, in charge of privatisation of both companies and a group of investment dealers bas been retained to provide detailed financial counsel. The industry does not see a decision likely until year-end at the earliest though the Government says it bas had many expressions of interest including some from Europe.

Canada's aerospace industry comprises nearly 150 companies in terms of volume, employment and research spending. Pratt and Whitney Canada is the largest single unit by far. The company, based in Montreal, has a satellite research operation at Toronto and is beginning to disperse some component manufacturing, first to Halifax and possibly to Winnipeg later. Its suppliers are concentrated mainly in Ontario and Quebec but are also located in the Maritimes and the West.

A unit of United Technologies of the U.S., the company has recovered from the recession and is developing several new engine types. McDonnell Douglas Canada in Toronto makes wings and other components for its U.S. parent and is a major employer while Bristol Aerospace in Winnipeg makes components. Rolls - Royce Canada does components and major overhauls and Fleet Industries in Ontario is a component maker participating in a $76m helicopter assembly plant with Messerschmitt-Bolkow Blohm of West Germany.

The Bell Textron helicopter plant proposed for Montreal at an initial cost of more than $500m is running a good year behind schedule, partly because of the sluggish market for small twin models first production is likely now at the end of 1986.

Ottawa and Quebec earlier proposed to make $250m or more available in upfront grants. While the project has been reviewed by Mr Stevens the commitments remain in place for the time being.

Total aerospace industry sales compiled by the Aerospace Industries Association of Canada were just over $3bn in 1984 and are expected to rise to $3.8bn this year. The forecast for 1986 is $5bn and for 1988 $6.5bn. The industry workforce including avionics, specialised electronic equipment and overhaul plants, dipped from 41,000 in 1981 to 37,100 in 1983 and recovered to 38,500 last year.

About 80 per cent of the industry's production is exported. Investment is about 15 per cent of sales and research about 10 per cent of sales.

The challenge though 1985 is to keep the momentum going to achieve a growing share of the American commercial and defence markets and persuade federal and provincial government to concentrate on programmes geared to holding the industry's costs down.

The avionics and electronics sectors and some component makers will have major opportunities opening up when the northern warning defence system is reviewed in international space programmes and also in the U.S. space station programme.

Buoyant activity worldwide

CONTINUED FROM PAGE 1

weapons of all kinds continues to grow.

Moreover, in the U.S., the much - publicised Strategic Defence Initiative, more popularly known as Star Wars—a plan to provide an effective defence in near-earth space against nuclear missiles—seems likely profoundly to influence research in the aerospace, electronics and related industries, in view of the substantial sums involved—amounting to several billion dollars annually.

Leap forward

What is also likely to be clearly discernible at the Paris Show is the accelerating pace of technological advance in aerospace. Although much of this leap forward is being fuelled by military money, especially in the U.S., it is affecting all sectors of the industry, and is substantially changing its character.

New techniques of propulsion, such as the emergence of prop-fans, the widening uses of new materials, such as composites, and the promise, yet to be fulfilled, of such new metal alloys as aluminium-lithium, together with the growth of new production techniques such as robotics and computer-aided design and manufacturing, are all profoundly influencing traditional patterns of research, design, development and ultimate production.

The new developments in all these fields, which have been in the research phase for some time past, are now coming to fruition in the production phase, at the same time that world demand in aerospace is expanding.

The new materials and techniques all have the objective of reducing costs and time-scales in manufacture, whilst improving the quality and efficiency of the finished aerospace products, and their emergence coincides with the need to keep costs across the entire aerospace spectrum under tighter control.

As a result, they are being eagerly exploited by the aerospace manufacturers, and their customers, as well as in associated industries such as avionics, metallurgy, ceramics and elsewhere. The impact of all these developments is bound progressively to widen, and sooner or later their influence will permeate many other industries outside aerospace.

This confirms once again, as it has in the past, the influence of aerospace as one of the major spearheads of industrial technology.

This rapidly developing situation is generating its own problems. The world's aerospace industries, but especially in the U.S. and Western Europe, are finding it difficult to recruit the highly skilled technologists they require to carry the many programmes forward.

Aerospace, always a high consumer of advanced technological manpower, seems likely to accelerate this trend, and where individual countries cannot recruit sufficient of such labour in their own countries, they will take it from others.

Already, the U.S. is seeking highly-qualified scientists from the UK, West Germany and France, and the only guarantees that the latter industries have of retaining skilled manpower is to ensure that their own competitive programmes are launched sufficiently soon to prevent a drain of talent to the U.S., where many such programmes are already established realities.

There are financial problems also. European and other aerospace industries are finding it difficult to compete with the programmes emerging in the U.S. on the back of substantial military funds, and as a result, there is an increasing emphasis on international collaboration in major new military and civil programmes.

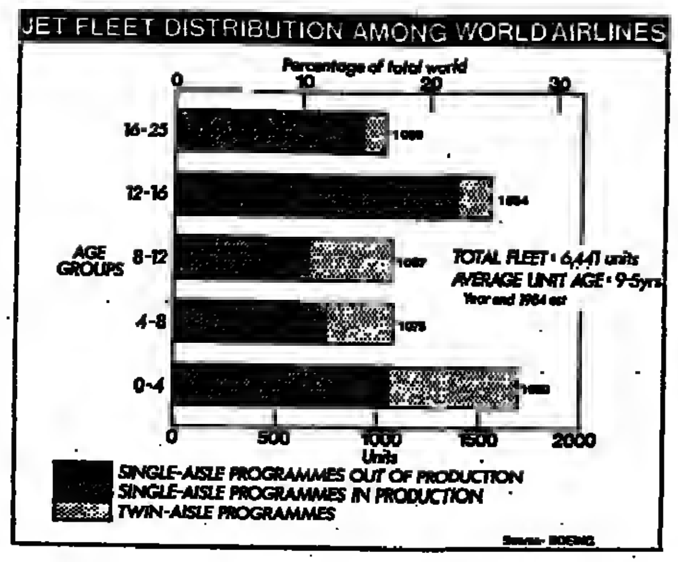
This is evidenced by the efforts in Western Europe to develop the new European tactical combat fighter aircraft programme; the increasing international collaboration in a wide range of space research activities such as the Manned Space Station; and continued emphasis on an indigenous European civil airliner manufacturing programme, with the widening of Airbus Industrie's aircraft family to include the A-320; as well as in aero-engines (through the V-2500 engine programme bringing together the UK, U.S., Japan, West Germany and Italy).

This international collaboration is also being stimulated by the emerging ambitions of many smaller countries to develop their own advanced technological capabilities. Many such countries have recognised that aerospace offers the quickest way into advanced technology, and they are prepared to spend on promoting their own aerospace industries.

Many such countries cannot afford large sums, but are nevertheless willing investors. Their fundamental desire for technological spin-off is sufficient to justify the outlays involved. It is significant in this context that countries as far apart as Brazil, China, Indonesia, Japan and Singapore are all actively promoting their aerospace industries, especially through international collaboration where they can achieve it.

One of the main themes of this survey is to illustrate where these changes are occurring, and to indicate what they are achieving or are intended to achieve. Many of the results of the new programmes now under way or in preparation will not be seen for some time to come.

Aerospace has always been an arena of high investment with only long-term returns. But what is already clear is that the technological revolution now under way is going to produce results the effects of which will be felt well into the next century.



Impact of new defence policies

India

K. K. SHARMA

SINCE the Indian Air Force is the main buyer from the government-owned Hindustan Aeronautics, the fortunes of India's aircraft-manufacturing company depend heavily on official assessments of air defence needs.

Inevitably, this depends on India's relations with neighbouring countries. These have changed over the past few years because of India's belief that U.S. arms supplies, notably the F-16s to Pakistan, pose a new threat and this had had a marked effect on plans for development of Hindustan Aeronautics.

The first casualty has been the policy that India should normally require sophisticated military equipment from abroad only if this is accompanied by the transfer of technology to make it in the country. For Hindustan Aeronautics, this means that it will no longer always be required to make fighter and other aircraft for the air force that are bought from Western countries and from the Soviet Union.

The first change came when India gave up plans to fully manufacture Jaguar aircraft under licence from British Aerospace. Jaguars are now being assembled at Hindustan Aeronautics' plant in Bangalore, Karnataka state, after kits are imported. This will keep Bangalore busy for a couple of years more; but after that the company will have to diversify into new areas.

This is particularly so after the government decided also not to manufacture the Mirage 2000 under licence from France. The decision stands that 40 Mirage 2000s will be purchased in flyaway condition and the needs of the Air Force will then be met from Soviet supplies.

The impact on Hindustan Aeronautics is that, having its plans for manufacture of the Jaguar and the Mirage 2000 severely curtailed, it will have to depend in future on its ambitious plans to manufacture future generations of the Soviet MIGs and on its own plans for development of aircraft.

The company has been making the MiG-21 for years and continues to produce its successor, the MiG-21-BIS, in three factories. These aircraft are now being modified to make what is a virtual double generation jump.

Although the Air Force flies the MIG-23s and MIG-25s that have been bought from the Soviet Union, Hindustan Aeronautics has been asked to go ahead with plans to make the MiG 27. The first aircraft has already been assembled by the company and test flown and it will not be long before the MiG-27 is fully manufactured in India, the only country outside the Soviet Union to produce this modern all-purpose fighter. This should enable Hindustan Aeronautics to make full use of its main manufacturing capacity at least through the 1980s.

Plans for designing and making India's own fighters continue. These are not being made fully public, partly for the reason that defence remains a highly confidential subject but also because such plans as those for manufacture of a light combat aircraft (LCA) have made slow progress because of the delay in finding a suitable foreign collaborator.

British Aerospace is one such possible collaborator, having prepared an LCA design of its own for joint development with other countries, and it has held discussions on this project with India, but with no conclusions so far.

The LCA is still very much in the planning stage and an early take-off is unlikely. All that has been done so far is to "define" a project management organisation.

More promising is the development of a GTX engine designed to power future combat aircraft. This gas turbine engine project is said to have made satisfactory progress and the engine is scheduled to run on the test bed at full rpm this year. A smaller gas turbine engine required for a pilotless target aircraft was tested successfully recently.

Taken with production of the indigenous Kiran Mark II and HPT-32 aircraft and other assorted aircraft such as helicopters, trainers and gliders, Hindustan Aeronautics hopes to have reached turnover of Rs 5.4bn ($429.3m) in 1984-85, higher than the Rs 4.3bn in the previous year in its 12 factories located in six states.

India's space programme continues to make strides in aiming at self-reliance in space technology in satellite communications and launch vehicles, although 1984's most dramatic achievement was the manned flight by the country's first cosmonaut aboard a Russian Salyut-7 space-station.

At present, a communications satellite, Insat-IC, is being built for its scheduled launch from the Space Shuttle in 1986. Preparatory development work and advance action on the indigenous second generation Insat-II test spacecraft has begun.

Suppliers hit by big cut in orders

Israel

DAVID LENNON

CUTS IN the defence budget necessitated by Israel's economic woes are hurting the country's aerospace industry which is dominated by government-owned corporations that sell most of their output and services to the local military.

The reduction in defence spending by the government has meant a 20 per cent drop in orders placed with Israel Aircraft Industries, the country's largest aerospace company, Mr Shalom Ariav, IAI's president, described this as having a "drastic impact" on some departments, which have suffered a 50 per cent cut in orders.

The sudden cancellation of orders by the military also means that thousands of workers are scheduled to be laid off by Israel Military Industries (IMI) and Rafael, the Defence Ministry's armament development authority. These companies produce missiles and other equipment for the Air Force.

There will also be less money available for research and development, which Mr Ariav believes could harm the industry in the long term.

Israel plunged into the aerospace industry in reaction to the 1967 arms embargo by President de Gaulle of France. This resulted in IAI's production of the Kfir series of fighters.

The programme to develop the Lavi combat aircraft, the Kfir's successor, is a key element in the drive to maintain a degree of self-sufficiency and to keep Israeli technology among the world leaders.

However, the Lavi project continues to be dogged by question marks. Development costs were originally budgeted at $1.3bn but, according to Mr Yitzhak Rabin, the Defence Minister, are now approaching $2bn.

Israel is looking for an American partner to co-produce the aircraft and subsequently enable Israel to use U.S. military funds to pay for the purchase of the aircraft.

A co-production agreement already exists between Pratt and Whitney and Israel's Bet-Shemesh engines to jointly build the PW-120 engine which will power the Lavi.

State-owned IAI employs 20,000 people and dominates the aviation field both as a manufacturer and a contractor. Turnover in 1984-85 is expected to be $900m, compared to $779m the previous fiscal year, according to Mr Ariav.

Exports reached $430m, up substantially from the $327m recorded in 1983-84 but still well below the record-breaking overseas sales of more than $515m in 1981-82.

IAI's new-generation executive jet, the Astra, which is on display at the Paris Air Show, is expected to be certificated in August, with delivery of the first of the ten aircraft which have been sold in October.

IAI, which already offers combat aircraft modernisation for both the Dassault-Breguet Mirage 3/5/50 and F1 series and McDonnell Douglas A-4 Skyhawk, is about to add the F-4 Phantom to its list. The company is also considering moderaisation packages for the Northrop F-5 and possibly even the Soviet Mig-21.

The Phantom upgrading is being carried out in a joint programme with Pratt and Whitney and Boeing, and work is already in progress to install a new engine. Canard lifting surfaces will be fitted as will special fuel tanks. There will be structural modifications to alleviate fatigue problems and modernised avionics.

IAI and the Defence Ministry's Rafael jointly produce the Barak ship-launched missile system to provide point defence against aircraft and missile attack, including Exocet-type sea skimmers.

Rafael, which is the largest research and development organisation for weapons systems in the country, also makes the Python 3 air-to-air combat missile which is replacing the Shafrir 2 which is now being phased out.

Rafael plays a prominent role in the wide range of electronic warfare systems being developed and produced in Israel. It has a turnover of about $300m, with more than 10 per cent of its turnover exported.

Tadiran, Israel's largest electronics concern with 12,500 employees, manufactures a full range of tactical radios and also produces strategic communications systems. Some 35 to 40 per cent of its 1984 sales of $557m went to the military.

Together with IAI, Tadiran is now working to jointly produce a new remote pilotless vehicle, thus ending the rivalry between them for markets for their respective mastiff and scout drones.

Israel's major manufacturer of air, ground and shipborne radar equipment is Elta. This company sells both military and civilian equipment. It is currently engaged in developing a new radar for the Lavi.

Elbit is a major local producer of weapon delivery and navigation systems. It is responsible for avionics integration for the Phantom retrofit programme as well as having developed weapons delivery and navigation systems for the Kfir-C7.